

DAMAGE SURVEY REPORT (DSR)
Emergency Watershed Protection Program – Recovery

Section 1A

Date of Report:	<u>1/23/2012</u>			NRCS Entry Only	
DSR Number:	<u>Gr. Rvr. Diversion, Berm, bank stabilization.</u>	Project Number:	<u>Green River River channel</u>	Eligible:	YES <u>X</u> NO <u> </u>
				Approved:	YES <u>X</u> NO <u> </u>
				Funding Priority Number (from Section 4)	<u>3-abef</u>
				Limited Resource Area:	YES <u> </u> NO <u>X</u>
Section 1B Sponsor Information					
Sponsor Name:	<u>Utah Dept Ag Food</u>	Contact:	<u>Ron Davidson (UDAF) ; Chris Dunham, GRCD, 435-820-8202</u>		
Address: <u>350 N Redwood Road PO Box 146500</u>					
City/State/Zip: <u>Salt Lake City, Utah 84114-6500</u>					
Telephone Number: <u>801- 538 -7100</u> Fax: <u>801-538-7126</u>					

Section 1C Site Location Information

County:	<u>Emery/Grand</u>	State:	<u>Utah</u>	Congressional District:	<u>II</u>				
Latitude:	<u> </u>	Longitude:	<u> </u>	Section:	<u>NE 3</u>	Township:	<u>21S</u>	Range:	<u>16E</u>
Latitude:	<u> </u>	Longitude:	<u> </u>	Section:	<u>NW 28</u>	Township:	<u>20S</u>	Range:	<u>16E</u>
UTM Coordinates:		<u>Drainage: Green River; Reach: NE of Green River, Utah</u>							
Damage Description: <u>Flood event within the Green River corridor – damaged river channel, diversion dam, pump station & road.</u>									

Section 1D Site Evaluation

All answers in this Section must be YES in order to be eligible for EWP assistance.

Site Eligibility	Yes	NO	Remarks
Damage was a result of a natural disaster?*	<u>X</u>		<i>High flows directed at area above diversion cutbank and threaten diversion structure and headgate. River flooding eroded around pump station, road and threatened canal.</i>
Recovery measures would be for runoff retardation or soil erosion prevention?*	<u>X</u>		<i>Restoration of damaged diversion structure. Scour under structure due to extended high flows</i>
Threat to life and/or property?*	<u>X</u>		<i>Threat to diversion structure and the operation of 3 private canal systems and irrigation for ~4,000 acres</i>
Event caused a sudden impairment in the watershed?*	<u>X</u>		<i>Erosion of structure's foundation</i>
Imminent threat was created by this event?*	<u>X</u>		<i>Critical erosion undercutting structure – leading to potential failure with next large runoff event.</i>
For structural repairs, not repaired twice within ten years?*	<u>N/A</u>		<i>N/A</i>
Site Defensibility			
Economic, environmental, and social documentation adequate to warrant action? (Go to pages 3, 4, 5 and 6 ***)	<u>X</u>		<i>Protection of irrigation structures, road and private property.</i>
Proposed action technically viable? (Go to Page 9 ***)	<u>X</u>		<i>Protect against accelerated erosion, deposition. Proven/tested practices to be used. +Planting.</i>

Have all the appropriate steps been taken to ensure that all segments of the affected population have been informed of the EWP program and its possible effects? YES X NO Advertised in local paper

Comments: Information to Green River Conservation District and Emery Co. Commission = Sponsoring Organization.

Section 1E Proposed Action

Describe the preferred alternative from Findings: Section 5 A:

1. *Restore Green River Diversion Dam and repair foundation damage*
2. *Re-construct embankment on the Hastings Ranch – East side of the River.*
3. *Stabilize River banks and stream channel at Green River Farms Pump Station and road damage area with a combination of rock rip rap with vegetation plantings (willow, etc...) for restoration of native habitat – 2 sites of protection work to be completed.*

Total installation cost identified in this DSR: Section 3: **\$2,265,500**

Section 1F NRCS State Office Review and Approval

Reviewed By: _____ Date Reviewed: _____
State EWP Program Manager

Approved By: _____ Date Approved: _____
State Conservationist

PRIVACY ACT AND PUBLIC BURDEN STATEMENT

NOTE: The following statement is made in accordance with the Privacy Act of 1974, (5 U.S.C. 552a) and the Paperwork Reduction Act of 1995, as amended. The authority for requesting the following information is 7 CFR 624 (EWP) and Section 216 of the Flood Control Act of 1950, Public Law 81-516, 33 U.S.C. 701b-1; and Section 403 of the Agricultural Credit Act of 1978, Public Law 95-334, as amended by Section 382, of the Federal Agriculture Improvement and Reform Act of 1996, Public Law 104-127, 16 U.S.C. 2203. EWP, through local sponsors, provides emergency measures for runoff retardation and soil erosion control to areas where a sudden impairment of a watershed threatens life or property. The Secretary of Agriculture has delegated the administration of EWP to the Chief of NRCS on state, tribal and private lands.

Signing this form indicates the sponsor concurs and agrees to provide the cost-share to implement the EWP recovery measure(s) determined eligible by NRCS under the terms and conditions of the program authority. Failure to provide a signature will result in the applicant being unable to apply for or receive a grant the applicable program authorities. Once signed by the sponsor, this information may not be provided to other agencies. IRS, Department of Justice, or other State or Federal Law Enforcement agencies, and in response to a court or administrative tribunal.

The provisions of criminal and civil fraud statutes, including 18 U.S.C. 286, 287, 371, 641, 651, 1001; 15 U.S.C. 714m; and 31 U.S.C. 3729 may also be applicable to the information provided. According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0578-0030. The time required to complete this information collection is estimated to average 117/1.96 minutes/hours per response, including the time for reviewing instructions, searching existing data sources, field reviews, gathering, designing, and maintaining the data needed, and completing and reviewing the collection information.

USDA NONDISCRIMINATION STATEMENT

"The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.)

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Civil Rights Statement of Assurance

The program or activities conducted under this agreement will be in compliance with the nondiscrimination provisions contained in the Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statutes: namely, Section 504 or the Rehabilitation Act of 1973, Title IX of the Amendments of 1972, the Age Discrimination Act of 1975, and the Americans with Disabilities Act of 1990. They will also be in accordance with regulations of the Secretary of Agriculture (7 CFR 15, 15a, and 15b), which provide that no person in the United States shall on the grounds of race, color, national origin, gender, religion, age or disability, be excluded from participation in, be denied the benefits of, or otherwise subjected to discrimination under any program or activity receiving Federal financial assistance from the U.S. Department of Agriculture or any agency thereof.

Section 2 Environmental Evaluation

2A Resource Concerns	2B Existing Condition	2C Alternatives and Effects		
		Proposed Action	No Action	Alternative
		<p>1. Restore Green River Diversion Dam and repair foundation damage; add new concrete apron; add fish screen and radial gate to the canal inlet;</p> <p>2. Re-construct embankment on the Hastings Ranch – East side of the River.</p> <p>3. Stabilize River banks and stream channel at Green River Farms Pump Station and road damage area with a combination of rock rip rap with vegetation plantings (willow, etc...) for restoration of native habitat – 2 sites of protection work to be completed.</p>	<p>1- Sponsors, other local representatives & property owners will complete whatever protection measures they can without federal assistance. As local funds become available.</p> <p>2 - Native vegetation will re-establish over time.</p>	<p>1. For streambank restoration areas: Planting to decrease erosion of river bank, pole planting, willows, j-hooks, rock barbs to help stabilize the banks.</p> <p>2. Diversion Dam: leave concrete apron as-is except for minor repairs where damaged; perform minimal repair with rock riprap in the foundation; install radial gate at canal inlet – with a proper fish screen for the T&E species in the River.</p>
2D Effects of Alternatives				
Soil				
Soil Erosion (streambank/diversion foundation)	Bank/foundation erosion resulting from high runoff flows in the Green River.	Banks protected at key sites to protect infrastructure, diversion dam foundation restored – short/long-term (+)	Bank erosion will increase with time due to bare banks, vertical slopes; diversion may fail due to loss of foundation material	Bank work: Short term (-) erosion until veg established in the long term; Diversion: Short-term (-) during construction; Long-term (+)
Condition	NA	NA	NA	NA
Water				
Water quality – suspended sediments	Increased sediment due to bank erosion – affecting water quality of the river and increase to irrig. systems.	Long-term (+) water quality with protection of the banks – less bank erosion. Long-term channel dynamics with sections of armoring on the channel could affect natural geomorphic functions. Less erosion at diversion foundation	Short term WQ loading will be increased during high runoff events; Long-term slight increase until veg re-established	Long-term channel dynamics better with more vegetation planting at stream bank areas; Diversion short term (-) during construction ; long term (0)
Water Quantity	Threat to loss of irrigation water for 4,000 acres	Long-term (+) to irrigation systems, continued sustainability of farm operations.	Short/long term decrease to irrig. Systems.	Long-term (+) to irrigation systems, continued sustainability of farm operations.
Drinking water	NA	NA	NA	NA
Air				
Air quality – particulates	No effect	Short term (-) with construction at sites- dust; long-term(o)	No effect	Short term (-) with construction at sites- dust; long-term(o)

Plant					
Plant health and vigor	Minimal vegetation along stream corridor damaged and/or lost; threat to loss of irrigation water to 4,000 acres of cropland	Natural recruitment at worksites will diminish due to work; however plantings will replace lost natural recruitment. Irrigated acres protected.	Decrease in vigor with increased erosion at banks; irrigated acres still threatened for next storm event and potential failure of diversion.	Natural recruitment at worksites will diminish due to work; however plantings will replace lost natural recruitment. Irrigated acres protected.	
Plants-invasives, noxious weeds	Erosion of bank areas has left bare areas open to invasive plant recruitment.	Short-term (-) during veg re-establishment period (2-5 yrs) after construction. Long-term invasive species control to maximize federal investment and maintain floodplain function. There will be competition from native species.	Damaged areas open to invasive recruitment, although, eventually, native vegetation will provide competition.	Short-term (-) during veg re-establishment period (2-5 yrs). Long-term invasive species control to maximize federal investment and maintain floodplain function. There will be competition from native species with the invasive species.	
Animal					
T&E species	The presence of 4 endangered fish in the Green River will require an EA before any action.		Effects to be evaluated with EA.	Effects to be evaluated with EA.	Effects to be evaluated with EA.
	Common Name	Scientific Name			
	Bonytail	Gila elegans			
	Colorado Pikeminnow	Ptychocheilus lucius			
	Humpback Chub	Gila cyphus			
	Razorback Sucker	Xyrauchen texanus			
Domestic animals	N/A		N/A	N/A	N/A
Wildlife habitat – food and cover	Vegetation along riparian corridor moderately damaged affecting overall food and cover availability.	Short-term (-) in the work area. Vegetation, once established, would be improved compared to the No Action alternative due to plantings.	Vegetation along riparian corridor moderately damaged. Veg should recover to produce healthy and diverse food & cover.	Short-term (-) in the work area. Vegetation, once established, would be improved compared to the No Action alternative due to plantings.	
Sensitive Species	To be evaluated with EA documentation		To be evaluated with EA documentation	To be evaluated with EA documentation	To be evaluated with EA documentation
Other					

Human	Erosion of streambanks - creating threat to pump station, road, diversion structure and 3 canal operations for 4,000 acres.	Protection for streambanks , pump station, road, diversion structure and 3 canal systems benefitting 4,000 acres	Protection work would be done over time as City/County and private resources became available. No Federal assistance. Continued threat to infrastructure.	Protection for streambanks, pump station, road, diversion structure and 3 canal systems benefitting 4,000 acres,
Public Health & Safety	No effect	No effect	No effect	No effect

Completed By: Wayne Urie Date: 3/29/12

Section 2E Special Environmental Concerns

Resource Consideration	Existing Condition	Alternatives and Effects			
		Proposed Action	No Action	Alternative	
Clean Water Act Waters of the U.S.	Consultation with Army Corp to occur as needed	Consultation will occur as per policy.	NA	Consultation will occur as per policy.	
Coastal Zone Management Areas	N/A	N/A	N/A	N/A	
Coral Reefs	N/A	N/A	N/A	N/A	
Cultural Resources	Evaluation & consultation underway	SHPO clearance will be completed to address proposed action, which will mitigate any adverse effects.	N/A	SHPO clearance would be completed to address any alternative, which will mitigate potential adverse effects.	
Endangered and Threatened Species	The presence of 4 endangered fish in the Green River will require an EA before any action.		Effects to be evaluated with EA.	Effects to be evaluated with EA.	Effects to be evaluated with EA.
	Common Name	Scientific Name			
	Bonytail	Gila elegans			
	Colorado Pikeminnow	Ptychocheilus lucius			
	Humpback Chub	Gila cyphus			
Razorback Sucker	Xyrauchen texanus				
Environmental Justice	No effect	No effect	No effect	No effect	
Essential Fish Habitat	N/A	N/A	N/A	N/A	
Fish and Wildlife Coordination	To be evaluated with EA documentation	To be evaluated with EA documentation	To be evaluated with EA documentation	To be evaluated with EA documentation	
Floodplain Management	As per Exec Order 11988	Short-term (-) with construction in the floodplain; long-term (+) with veg & control	Risk of deposition on floodplains until veg re-established	Short-term (-) with construction in the floodplain; long-term (+) with veg & control	
Invasive Species	Erosion of bank areas has left bare areas open to invasive plant recruitment.	Short-term (-) during veg re-establishment period (2-5 yrs) after construction. Long-term invasive species control to maximize federal investment and maintain floodplain function. There will be competition from native species.	Damaged areas open to invasive recruitment, although, eventually, native vegetation will provide competition.	Short-term (-) during veg re-establishment period (2-5 yrs). Long-term invasive species control to maximize federal investment and maintain floodplain function. There will be competition from native species with the invasive species.	
Migratory Birds	Minor vegetation along riparian corridor damaged and/or lost. Returning birds will have very slightly less nesting habitat in the short-term.	No disturbance from construction activities since work will be outside nesting period. Natural recovery of vegetation will provide nesting	Returning birds will have slightly less nesting habitat in the short-term, however natural recovery of vegetation will provide nesting	No disturbance from construction activities since work will be outside nesting period. Natural recovery of vegetation will provide	

		habitat in the long term	habitat in the long term. (0)	nesting habitat in the long term
Prime and Unique Farmlands	To be evaluated with EA documentation	To be evaluated with EA documentation	To be evaluated with EA documentation	To be evaluated with EA documentation
Riparian Areas	Minor vegetation along riparian corridor damaged and/or lost affecting minor overall food and cover availability.	Short-term (-) in the work area. Vegetation, once established, would be improved compared to the No Action alternative due to willow planting & improvement.	Vegetation along riparian corridor damaged and/or lost. Veg should recover to produce healthy and diverse food & cover.	Short-term (-) in the work area. Vegetation, once established, would be improved compared to the No Action alternative due to willow planting & improvement.
Scenic Beauty	Minor vegetation lost or damaged along riparian corridors.	Short-term (-) during construction; & until veg re-established; Veg plantings at the back toe of the proposed rock structure at the pump station will help restore the natural visual quality of the area. (+)	Area to recover naturally. Short term (-) and risk of invasive vegetation encroaching on damaged areas.	Short-term (-) during construction; & until veg re-established; Veg plantings at the back toe of the proposed rock structure at the pump station will help restore the natural visual quality of the area. (+)
Wetlands	No wetlands present	N/A	N/A	N/A
Wild and Scenic R.	N/A	N/A	N/A	N/A

Completed By: Wayne Urie

Date: 3/29/12

Section 2F Economic

This section must be completed by each alternative considered (attach additional sheets as necessary).

	Future Damages (\$)	Damage Factor (%)	Near Term Damage Reduction
Properties Protected (Private)			
1) Green River Diversion Dam-740 feet long	2,000,000	20	400,000
2) 3 Canal Operations – serving ~4,900 acres of cropland: (Production value: 358 acres of melons valued @ \$2430/ac = \$869940.; 4542 acres of hay and corn cropland valued @ \$804/ac = \$3,651,768) from FSA crop report data and producer interviews	4,521,708	60	2,713,025
3) Irrigation Pump Station; 2-150 horsepower pumps (Value from irrigator's installation cost)	450,000	50	225,000
4) Historical Hastings Ranch (embankment repair)	8,000	50	4,000
5) Historical Water Wheel – E.Side of River	50,000	10	5,000
6) Power Generation Facility (Lee Thayn interview)	1,000,000	10	100,000
Properties Protected (Public)			
Hastings Road – adjacent to Pump Station	20,000	20	4,000
Business Losses			
Power Generation Capability (Lee Thayn annual income)	240,000	50	120,000
Other			
T & E Species (<i>difficult to put value for this damage survey</i>)			
Estimated Cost = \$2,265,500			
Total Near Term Damage Reduction			3,346,025
Net Benefit (Total Near Term Damage Reduction minus Cost from Section 3)			1,080,525

Completed By: Wayne Urie Date: 3/29/12

Section 2G Social Consideration

This section must be completed by each alternative considered (attach additional sheets as necessary).

	Yes	No	Remarks
Has there been a loss of life as a result of the watershed impairment?		X	
Is there the potential for loss of life due to damages from the watershed impairment?		X	
Has access to a hospital or medical facility been impaired by watershed impairment?		X	
Has the community as a whole been adversely impacted by the watershed impairment (life and property ceases to operate in a normal capacity)	X		Diversion dam failure could impact operation for 3 canal systems affecting ~4,900 acres of cropland. Scour damage at the Green River Farms pump station could cause failure of the pumps with subsequent high runoff – loss of irrigation to 400 acres.
Is there a lack or has there been a reduction of public safety due to watershed impairment?	X		Access road damage could cause road to wash out with subsequent high runoff.

Completed By: Wayne Urie

Date: 3/29/12

Section 2H Group Representation Information

This section is completed only for the preferred alternative selected.

Census tract(s): [Emery County](#)

Completed By: [NRCS](#)

Date: **3/29/12**

Info Source: <http://www.cubitplanning.com/city/13817-green-river-city-census-2010-population>

Ethnic Population (2010)	
White	76.4%
Black	0.3%
American Indian	0.7%
Asian	0.5%
Pacific Islander	0%
Hispanic/All Races	21.4%

2000 Census Data

Geographic area	Population	Housing units	Area in square miles			Density per square mile of land area	
			Total area	Water Area	Land Area	Population	Housing units
Green River City, Emery County	973	376	12.6	0.1	12.5	77.8	30.0

Source: http://en.wikipedia.org/wiki/Green_River,_Utah

Section 2I. Required consultation or coordination between the lead agency and/or the RFO and another governmental unit including tribes:

Easements, permissions, or permits:

Access easement – Land Rights easement for Sponsor to do work

404 Stream Alteration Permit – ACOE/Div of Water Rights (Sponsor to procure)

Individual Private Property owners (Sponsor will procure)

SHPO Consultation – Andrew Williamson, Archaeologist, NRCS – Review Sponsors findings, forward to SHPO

Mitigation Description:

To be evaluated with proposed EA for the proposed action.

Agencies, persons, and references consulted, or to be consulted:

- *USFWS*
- *Utility Companies: Gas, Electric – for all construction work proposed*
- *Wildlife Habitat agencies (T&E, Sensitive Species list, Nesting periods, etc....)*
- *Stream Alterations Permit Process /ACOE Coordination*
- *State Historic Preservation Officer (SHPO) Coordination: Andrew Williamson (NRCS Archaeologist)*
- *Green River Conservation District: Chair = Chris Dunham*
- *1) Thayn Canal; 2) Green River Canal Co. 3) East Side Canal*
- *Green River City*
- *Emery County Commission and Grand County Council Coordination*

Section 3 Engineering Cost EstimateCompleted By: B.Smart Date: 12/03/2011**This section must be completed by each alternative considered (attach additional sheets as necessary).**

Item	Description	Quantity	Unit	Unit Price	Amount
1	Repair Diversion Dam	1	EA		1,300,000
	Fish Screen	1	EA		300,000
	Radial Gate Operation	1	EA		300,000
2	Rock Riprap (Div Dam Foundation)	740	LF	400	296,000
3	Pump Station Protection	150	LF	400	60,000
	Plantings – toe, mid, top	150	EA	10	1,500
	~50 plnts/row = 150 plants				
4	Embankment repair-Hastings Ranch – E.side	100	LF	80	8,000
TOTAL					\$2,265,500

AC	Acre	LF	Linear Feet	TN	Ton
CY	Cubic Yard	LS	Lump Sum	Other (Specify)	
EA	Each	SF	Square Feet		
HR	Hour	SY	Square Yard		

Section 4 NRCS EWP Funding Priority

Complete the following section to compute the funding priority for the recovery measures in this application (see instructions on page 14).

Priority Ranking Criteria	Yes	No		Ranking Number Plus Modifier
1. Is this an exigency situation?		X		
2. Is this a site where there is serious, but not immediate threat to human life?		X		
3. Is this a site where buildings, utilities, or other important infrastructure components are threatened?	X			3
4. Is this site a funding priority established by the NRCS Chief?	X			
The following are modifiers for the above criteria			Modifier	
a. Will the proposed action or alternatives protect or conserve federally-listed threatened and endangered species or critical habitat?			a	
b. Will the proposed action or alternatives protect or conserve cultural sites listed on the National Register of Historic Places?			b	
c. Will the proposed action or alternatives protect or conserve prime or important farmland?			-	
d. Will the proposed action or alternatives protect or conserve existing wetlands?			-	
e. Will the proposed action or alternatives maintain or improve current water quality conditions?			e	
f. Will the proposed action or alternatives protect or conserve unique habitat, including but not limited to, areas inhabited by State-listed species, fish and wildlife management area, or State identified sensitive habitats?			f	

Enter priority computation in Section 1A, NRCS Entry, Funding priority number.

3-abef

Remarks:

Consultation with habitat managers will be carried out to consider any potential effects on species within the proposed work areas. SHPO consultation will be carried out to ensure consideration of any potential historical resources within the proposed work areas – with consideration to ingress and egress areas.

An EA is proposed for the proposed EWP work since it is deemed outside of the EWP Programmatic EIS analysis. There are T&E fish species present in the Green River that will need to be considered in the alternative analysis.

A Statement of Work for the EA will be based on the Preliminary Design Report for the Green River Diversion Dam where some initial alternatives for the repair of the structure were evaluated for engineering/technical feasibility and costs. Other work identified by the sponsors which is eligible for EWP assistance will be considered in the EA.

Section 5A Findings

Finding: Indicate the preferred alternative from Section 2 (Enter to Section 1E): Proposed Action

- Restore Green River Diversion Dam and repair foundation damage*
- Re-construct embankment on the Hastings Ranch – East side of the River.*
- Stabilize River banks and stream channel at Green River Farms Pump Station and road damage area with a combination of rock rip rap with vegetation plantings (willow, etc...) for restoration of native habitat – 2 sites of protection work to be completed.*

I have considered the effects of the action and the alternatives on the Environmental Economic, Social; the Special Environmental Concerns; and the extraordinary circumstances (40 CFR 1508.27). I find for the reasons stated below, that the preferred alternative:

http://www.nrcs.usda.gov/programs/Env_Assess/EWP_FINALPEIS/EWP.html

X	Has been sufficiently analyzed in the EWP PEIS (reference all that apply)	
Chapter	<u>2</u>	Program Objectives & Constraints, Restoration Practices (Streambank, Debris, Levee/Dam)
Chapter	<u>3</u>	Program Alts-Impacts on Watershed Ecosystems, Human Communities, Mitigation requirements
Chapter	<u>4</u>	Affected Environment
Chapter	<u>5</u>	Environmental Consequences
Chapter		

X May require the preparation of an environmental assessment or environmental impact statement.
The action will be referred to the NRCS State Office on this date: 3/29/12

NRCS representative of the DSR team: [Wayne Urie](#), [N.Evenstad](#), [J.Roper](#).

Title: DSR Team Date: 3/29/12

Section 5B Comments :

The estimated cost and final design for the proposed measures are subject to change pending consultation with stakeholders, habitat managers, land managers and regulatory authorities. Final design considerations will evaluate the reliability and technical adequacy to provide the needed protection. Ingress and egress will be considered. Further analysis will be carried out in the EA process, including a public meeting and any of the required NEPA documentation.

Section 5C

Sponsor Concurrence :

Sponsor Representative

Title: _____ Date: _____

Section 6 Attachments:

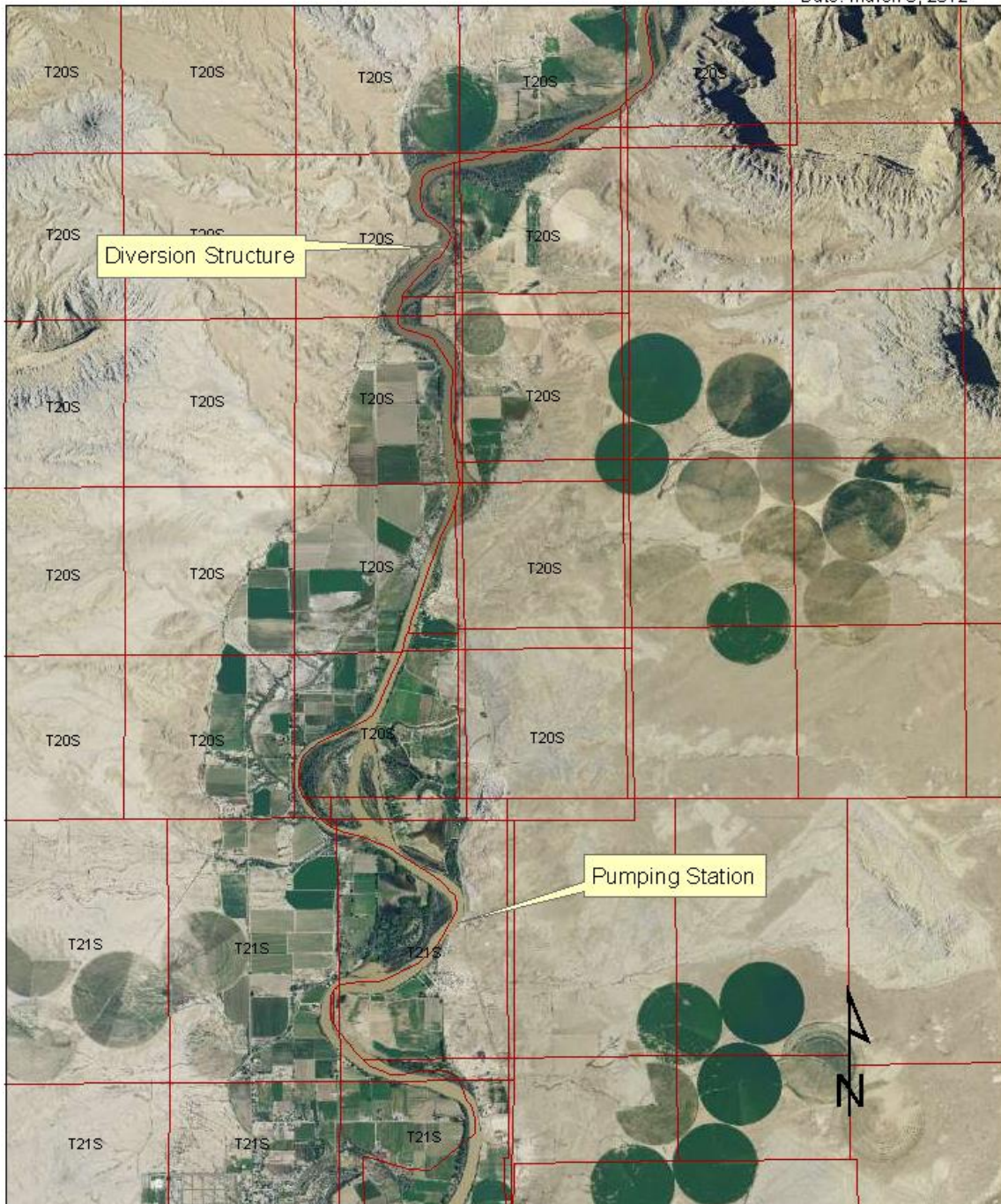
- A. Location Map
B. Site Plan or Sketches
C. Other (explain): Photos & Endangered Species List

Attachment A: Location Map

Green River EWP Location Map

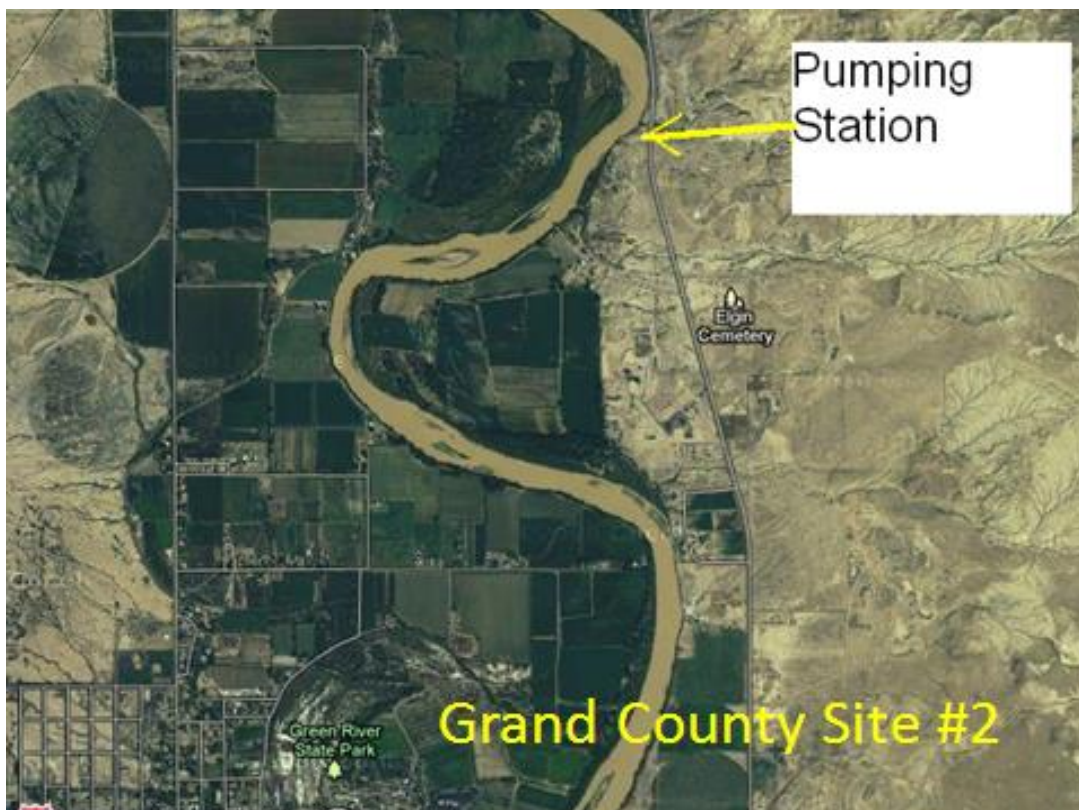
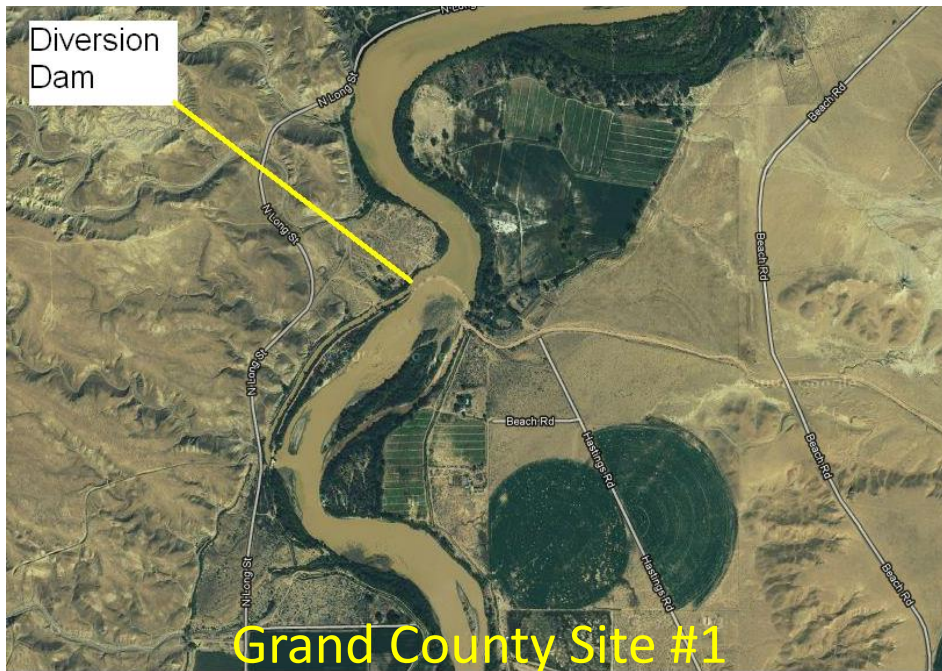
Customer: Green River CD
Sponsor: Utah Division of Water Rights

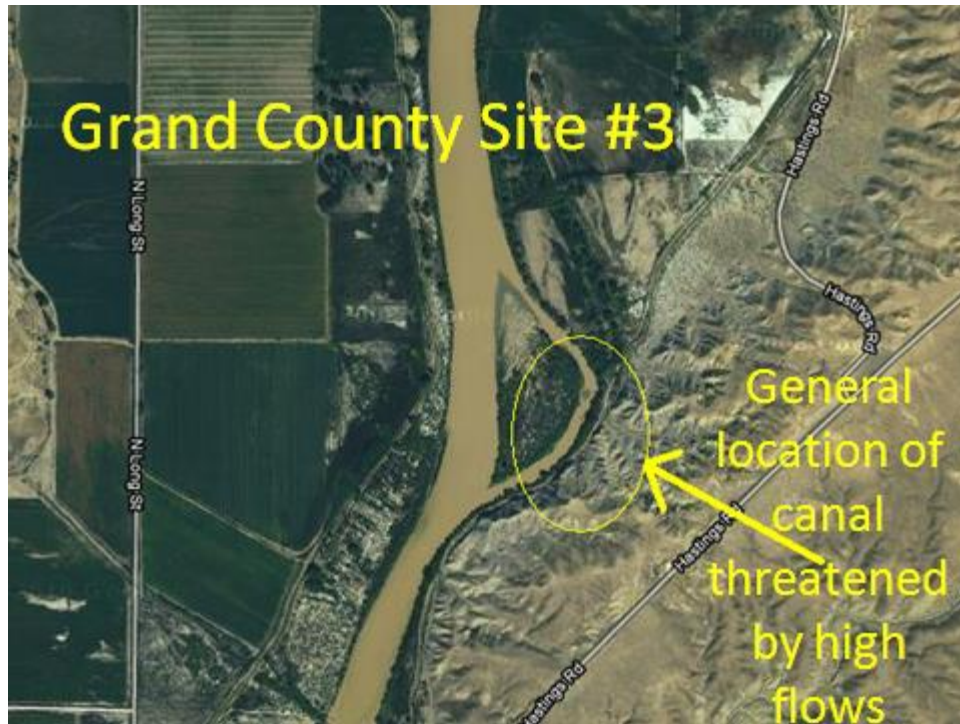
Office: Price Office
Agency: NRCS
Assisted by: Wayne Urie
Date: March 8, 2012



Attachment B:

Site Plan or Sketches





**Attachment C:
Photos**



Figure 1: Diversion Dam

**Attachment D:
Threatened & Endangered Species**

Emery County

Common Name	Scientific Name	Status
Jones Cycladenia	<i>Cycladenia humilis var jonesii</i>	T
Last Chance Townsendia	<i>Townsendia aprica</i>	T
Barneby Reed-mustard	<i>Schoenocrambe barnebyi</i>	E
San Rafael Cactus	<i>Pediocactus despainii</i>	E
Winkler Pincushion Cactus	<i>Pediocactus winkleri</i>	T
Wright Fishhook Cactus	<i>Sclerocactus wrightiae</i>	E
Humpback Chub	<i>Gila cypha</i>	E
Bonytail	<i>Gila elegans</i>	E
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	E
Razorback Sucker	<i>Xyrauchen texanus</i>	E
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	C
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	C
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	T
Black-footed Ferret	<i>Mustela nigripes</i>	E Extirpated
Canada Lynx	<i>Lynx canadensis</i>	T
Gray Wolf	<i>Canis lupus</i>	E

Grand County

Common Name	Scientific Name	Status
Jones Cycladenia	<i>Cycladenia humilis var jonesii</i>	T
Humpback Chub	<i>Gila cypha</i>	E
Bonytail	<i>Gila elegans</i>	E
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	E
Razorback Sucker	<i>Xyrauchen texanus</i>	E
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	C
Gunnison Sage-grouse	<i>Centrocercus minimus</i>	C
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	T
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	C
Black-footed Ferret	<i>Mustela nigripes</i>	E Extirpated



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-5059** APPLICATION/CLAIM NO.: **D46** CERT. NO.:
 CHANGES: [a26540](#) (Filed: 04/15/2002) Approved

OWNERSHIP*****

NAME: Dorothy A. Carter
 ADDR: 743 North 800 East
 Price UT 84501

NAME: Green River Canal Company
 ADDR: P.O. Box 84
 Green River UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 06/18/1952|PRIORITY: / /1880|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: []|ActionDate: |PROOF DUE:
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: 11/06/1969|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [91-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Diligence Claim Source of Info: Ownership Segregation Status: Water User's Claim

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 16.0 acre-feet
 SOURCE: Green River (Gravity Canal)
 COUNTY: Emery COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) [N 1950 ft W 800 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [615941](#).

IRRIGATION: 4.0 acres PERIOD OF USE: 04/01 TO 10/31

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----

	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE
Sec 20 T 20S R 16E SLBM	*				*			X	*				*	
Sec 29 T 20S R 16E SLBM	*				*	X		X	*	X			X	
Sec 31 T 20S R 16E SLBM	*				*			X	*				*	X
Sec 32 T 20S R 16E SLBM	X		X	X	X				X				*	
Sec 03 T 21S R 16E SLBM *LOT 1														
Sec 03 T 21S R 16E SLBM *LOT 2														
Sec 03 T 21S R 16E SLBM *LOT 3														
Sec 03 T 21S R 16E SLBM *LOT 4														
Sec 03 T 21S R 16E SLBM *LOT 9														
Sec 03 T 21S R 16E SLBM *LOT 10														
Sec 03 T 21S R 16E SLBM *LOT 11														
Sec 04 T 21S R 16E SLBM	*				*				*				X	*X
Sec 04 T 21S R 16E SLBM *LOT 1														
Sec 04 T 21S R 16E SLBM *LOT 16														
Sec 04 T 21S R 16E SLBM *LOT 20														
Sec 09 T 21S R 16E SLBM	*	X		X	X	X	X	X	*	X		X	X	
Sec 10 T 21S R 16E SLBM	X	X	X	X	X		X		X	X	X	X	X	
Sec 15 T 21S R 16E SLBM	X	X	X	X	*				X		X		*	
Sec 16 T 21S R 16E SLBM	*	X			X	X	X	X	*	X		X	X	X
Sec 21 T 21S R 16E SLBM	*				*	X			*				*	
Sec 22 T 21S R 16E SLBM	X		X		*				*				*	

GROU

SEGREGATION HISTORY*****

This Right was Segregated from [91-294](#), with Appl#: D46, Approval Date: / / under which Proof is to be submitted.

This Right as originally filed:

FLOW IN	QUANTITY IN	WATER USES						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)		ACRE-FEET		
	16.0	4.0000						

Stock Cert. #143.

*****E N D O F D A T A*****

Utah Division of Water Rights | 1594 West North Temple Suite 220, P.O. Box 146300, Salt Lake City, Utah 84114-6300 | 801-538-7240
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THIS RIGHT IS BEING PROTESTED IN A PROPOSED DETERMINATION BOOK!!!

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: 91-294 APPLICATION/CLAIM NO.: D46 CERT. NO.:

OWNERSHIP*****

NAME: Green River Canal Company
ADDR: Green River UT 84525
INTEREST: 100%

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 06/18/1952|PRIORITY: / /1880|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [] |ActionDate: |PROOF DUE:
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: 11/06/1969|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [91-5] |MAP: [144d] |PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Diligence Claim Source of Info: Proposed Determination Status: Water User's Claim

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*FLOW: 59.8374 cfs OR 5888.2 acre-feet
SOURCE: Green River (Gravity Canal)
COUNTY: Emery COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) [N 1950 ft W 800 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [614585](#)
[91-294 \(WUC\)](#)

IRRIGATION: Sole Supply: 1439.5 acres of the Group Total of 1443.5 PERIOD OF USE: 04/01 TO 10/31
 STOCKWATER: Sole Supply: 2700.0000 ELUs of the Group Total of 2700.0000 PERIOD OF USE: 11/01 TO 03/31
 DOMESTIC: Sole Supply: 75.0000 EDUs of the Group Total of 75.0000 PERIOD OF USE: 11/01 TO 03/31

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*

	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE
Sec 20 T 20S R 16E SLBM	*				*			9.2000*					*			1.7000
Sec 29 T 20S R 16E SLBM	*				*	7.7000		9.0000*		0.7000		23.3000*	24.3000		0.2000	
Sec 31 T 20S R 16E SLBM	*				*			23.0000*					*			28.4000
Sec 32 T 20S R 16E SLBM	*	9.3000	36.0000	35.7000	17.7000*	4.7000			*	7.2000			*			
Sec 03 T 21S R 16E SLBM *LOT 1																
Sec 03 T 21S R 16E SLBM *LOT 10																
Sec 03 T 21S R 16E SLBM *LOT 11																
Sec 03 T 21S R 16E SLBM *LOT 2																
Sec 03 T 21S R 16E SLBM *LOT 3																
Sec 03 T 21S R 16E SLBM *LOT 4																
Sec 03 T 21S R 16E SLBM *LOT 9																
Sec 04 T 21S R 16E SLBM	*				*				*					4.1000*	0.7000	20.0000
Sec 04 T 21S R 16E SLBM *LOT 1																
Sec 04 T 21S R 16E SLBM *LOT 16																
Sec 09 T 21S R 16E SLBM	*		16.0000		1.1000*	33.8000	36.0000	37.5000	37.7000*		1.7000		9.2000*	43.2000		
Sec 10 T 21S R 16E SLBM	*	39.0000	31.6000	36.2000	38.6000*	20.0000		33.2000		38.7000*	40.0000	25.7000	34.3000*	22.7000		
Sec 15 T 21S R 16E SLBM	*	37.6000	20.7000	5.7000	0.4000*					8.5000*		5.2000	*			
Sec 16 T 21S R 16E SLBM	*		4.4000			29.5000	13.9000	16.2000	29.4000*		2.0000		0.2000*	28.5000	22.5000	
Sec 21 T 21S R 16E SLBM	*				*		23.0000			*			*			
Sec 22 T 21S R 16E SLBM	*	3.5000		1.4000	*				*				*			

GROL

SUPPLEMENTAL GROUP NO.: [614885](#). Water Rights Appurtenant to the following use(s):
[91-294 \(WUC\)](#), [3711 \(WUC\)](#)

IRRIGATION: Sole Supply: UNEVALUATED acres Group Total: 2.0 PERIOD OF USE: 03/01 TO 11/15

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*

* NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE |
Sec 09 T 21S R 16E SLBM * | | | | * | | | | 2.0000 | * | | | | * | | | |
GROU

=====
This Right (91-294) has an evaluated sole-supply total for irrigation of 1439.5000 acres.
=====

=====
This Right (91-294) is a member of 2 supplemental water right groups with irrigated acreage totaling 1445.5000 acres.
=====

PLACE OF USE for STOCKWATERING*****

	NORTH-WEST¼				NORTH-EAST¼				SOUTH-WEST¼				SOUTH-EAST¼			
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE
Sec 20 T 20S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	:	:	:
Sec 29 T 20S R 16E SLBM	*	:	:	:	*	:	X:	:	*	:	X:	:	*	X:	X:	:
Sec 31 T 20S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	:	X:	:
Sec 32 T 20S R 16E SLBM	*	X:	X:	X:	*	X:	:	:	*	X:	:	:	*	:	:	:
Sec 03 T 21S R 16E SLBM	*LOT 1															
Sec 03 T 21S R 16E SLBM	*LOT 2															
Sec 03 T 21S R 16E SLBM	*LOT 3															
Sec 03 T 21S R 16E SLBM	*LOT 4															
Sec 03 T 21S R 16E SLBM	*LOT 9															
Sec 03 T 21S R 16E SLBM	*LOT 10															
Sec 03 T 21S R 16E SLBM	*LOT 11															
Sec 04 T 21S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	X:	:	:
Sec 04 T 21S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	:	:	X:
Sec 04 T 21S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	:	X:	:
Sec 04 T 21S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	X:	*	:	:	:
Sec 04 T 21S R 16E SLBM	*LOT 1															
Sec 04 T 21S R 16E SLBM	*LOT 16															
Sec 04 T 21S R 16E SLBM	*LOT 20															
Sec 09 T 21S R 16E SLBM	*	:	X:	:	*	X:	X:	X:	*	:	X:	:	*	X:	:	X:
Sec 10 T 21S R 16E SLBM	*	X:	X:	X:	*	X:	:	X:	*	*	X:	X:	*	X:	:	X:
Sec 15 T 21S R 16E SLBM	*	X:	X:	X:	*	:	:	:	*	*	X:	:	*	:	:	:
Sec 16 T 21S R 16E SLBM	*	:	X:	:	*	X:	X:	X:	*	*	:	X:	*	X:	X:	:
Sec 16 T 21S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	:	:	X:
Sec 21 T 21S R 16E SLBM	*	:	:	:	*	:	X:	:	*	:	:	:	*	:	:	:
Sec 22 T 21S R 16E SLBM	*	X:	:	X:	*	:	:	:	*	:	:	:	*	:	:	:

SEGREGATION HISTORY*****

=====
This Right was Segregated from , with Appl#: , Approval Date: / / under which Proof is to be submitted.
This Right as originally filed:

FLOW IN		QUANTITY IN		W A T E R U S E S				
CFS		ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER
			ACREAGE	(ELUs)	(FAMILIES)	ACRE-FEET		
60.0	OR	5904.2	1443.5000	2700.0000	75.0000			

=====
The following Water Rights have been Segregated from 91-294:

(1) WRNUM: 91-5059 0.1626 OR 16.0 4.0000
APPL#: D46
NAME: Green River Canal Company
FILED: 04/15/2002 STATUS:
APPR:

Stock Cert. #143. Change Appl. a26540. Dorothy A. Carter

	CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
			ACREAGE	(ELUS)	(FAMILIES)	ACRE-FEET-----*)			
91-294 currently has: -	59.8374	OR	5888.2	1439.5000	2700.0000	75.0000			
*****E N D O F D A T A*****									



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-5043** APPLICATION/CLAIM NO.: **A73213** CERT. NO.:

OWNERSHIP*****

NAME: Green River Canal Company
 ADDR: P.O. Box 84
 Green River UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? Yes COUNTY TAX ID#:
 FILED: 11/03/2000|PRIORITY: 11/03/2000|PUB BEGAN: 11/28/2000|PUB ENDED: 12/05/2000|NEWSPAPER: Emery County Progress
 ProtestEnd:12/25/2000|PROTESTED: [HearHeld]|HEARNG HLD: |SE ACTION: [Approved]|ActionDate:06/24/2009|PROOF DUE: 06/30/2014
 EXTENSION: |ELEC/PROOF:[]|ELEC/PROOF: |CERT/WUC: |LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []|50YR DATE: 06/24/2059
 PD BOOK: [91-]|MAP: []|PUB DATE:

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Application to Appropriate Status: Approved

LOCATION OF WATER RIGHT*** (Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 20.0 cfs
 SOURCE: Green River (tributary to Colorado River)
 COUNTY: Emery COMMON DESCRIPTION: Tusher Wash dam

POINT OF DIVERSION -- SURFACE:

(1) [N 1950 ft W 800 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source: Green River (tributary to Colorado River)

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [615925](#)

OTHER: Non-consumptive use to sluice the raceway and canal system.
 Acre Feet Contributed by this Right for this Use: 36198.99902

PERIOD OF USE: 01/01 TO 12/31

OTHER COMMENTS*****

This water will not be used on any acreage but will be non-consumptively used in the raceway and canal system from the Tusher Wash Dam down to the terminus of the canal system where the water flows back into the Green River. The water sought under this application is needed to flush out the heavy silt build up in the Applicant's raceway and canal system caused by the extremely high silt loading of the Green River and the long, flat terrain over which the canal system traverses. The canal system must operate at capacity in order to function properly. This application aguments the sluice water contained in Water Right No. 91-294 (Dil. Claim 46), but the Applicant reserves all of its rights under said Diligence Claim, including the claimed diversion right to a total of 80 cfs during the irrigation season. The water will be returned at numerous sluice gates along the canal system.

PROTESTANTS*****

NAME: Lee Thayn
 ADDR: P.O. Box 447
 Green River UT 84525

NAME:
 ADDR:

 *****END OF DATA*****



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Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-39** APPLICATION/CLAIM NO.: **A6074** CERT. NO.: 1299

OWNERSHIP*****

NAME: Green River City
ADDR: Green River UT 84525
INTEREST: 100%

DATES, ETC.*****

LAND OWNED BY APPLICANT?	COUNTY TAX ID#:		
FILED: 02/22/1915 PRIORITY: 09/12/1921 PUB BEGAN:	PUB ENDED:	NEWSPAPER:	
ProtestEnd: PROTESTED: [No] HEARNG HLD:	SE ACTION: [Approved] ActionDate:09/09/1915 PROOF DUE:		
EXTENSION: ELEC/PROOF:[] ELEC/PROOF:	CERT/WUC: 12/08/1969 LAP, ETC:	LAPS LETTER:	
RUSH LETTR: RENOVATE: RECON REQ:	TYPE: []		
PD BOOK: [91-5] MAP: [144d] PUB DATE:			

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Proposed Determination Status: Certificate

LOCATION OF WATER RIGHT*** (Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*FLOW: 220.0 cfs
SOURCE: Green River
COUNTY: Emery COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

[\(1\) N 1950 ft W 800 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [614975](#).

POWER: Green River City Hydro-Electric Power Plant, rated at KW.	PERIOD OF USE: 01/01 TO 12/31
CFS Contributed by this Right for this Use: 159275.5957	

*****E N D O F D A T A*****



Online Services Agency List Business

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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-5075** APPLICATION/CLAIM NO.: **A30414dw1** CERT. NO.:
 CHANGES: [a27714](#) (Filed: 04/03/2003) Approved

OWNERSHIP*****

NAME: Gunnison Butte Mutual Irrigation Company
 ADDR: P.O. Box 447
 Green River UT 84525

NAME: State of Utah Board of Water Resources
 ADDR: P.O. Box 146201
 Salt Lake City UT 84114-6201

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 04/01/2003|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:10/06/1959|PROOF DUE: 10/31/2020
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: |LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: [] |50YR DATE: 10/06/2009
 PD BOOK: [91-] |MAP: [] |PUB DATE:

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Application to Segregate Status: Approved

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 2879.7792 acre-feet
 SOURCE: Green River
 COUNTY: Emery COMMON DESCRIPTION: 5.5 miles North of Green River

POINTS OF DIVERSION -- SURFACE:

(1) [S 569 ft W 911 ft from E4 cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: Tusher Diversion Dam
 (2) [N 1244 ft W 579 ft from E4 cor, Sec 20, T 20S, R 16E, SLBM](#)
 Diverting Works: Wilson Pump

Source: Green River

Source: Green River

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616607](#).

IRRIGATION: Sole Supply: 576.417 acres of the Group Total of 6206.25 PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*				
	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	
Sec 20 T 20S R 16E SLBM	*		X		*			X	*				*				
Sec 20 T 20S R 16E SLBM *LOT 1																	
Sec 29 T 20S R 16E SLBM	*				*			X	*				*				
Sec 29 T 20S R 16E SLBM *LOT 2																	
Sec 30 T 20S R 16E SLBM	*				*			X	*				*			X	X
Sec 31 T 20S R 16E SLBM	*				*				*				*			X	
Sec 04 T 21S R 16E SLBM	*				*				X	X	X	X	*				
Sec 04 T 21S R 16E SLBM *LOT 10																	
Sec 04 T 21S R 16E SLBM *LOT 11																	
Sec 04 T 21S R 16E SLBM *LOT 12																	
Sec 04 T 21S R 16E SLBM *LOT 13																	
Sec 04 T 21S R 16E SLBM *LOT 6																	
Sec 04 T 21S R 16E SLBM *LOT 7																	
Sec 04 T 21S R 16E SLBM *LOT 9																	
Sec 05 T 21S R 16E SLBM	*				*				X	X	X	X	X	X	X	X	X
Sec 05 T 21S R 16E SLBM *LOT 13																	
Sec 05 T 21S R 16E SLBM *LOT 15																	
Sec 05 T 21S R 16E SLBM *LOT 17																	
Sec 05 T 21S R 16E SLBM *LOT 18																	
Sec 05 T 21S R 16E SLBM *LOT 19																	
Sec 05 T 21S R 16E SLBM *LOT 20																	
Sec 05 T 21S R 16E SLBM *LOT 7																	
Sec 05 T 21S R 16E SLBM *LOT 9																	
Sec 08 T 21S R 16E SLBM	*				*			X	*				*			X	

GROU

OTHER COMMENTS*****

GENERAL:

The water under this application was originally allocated to the Flaming Gorge Project. It was not developed and was eventually assigned to the Board of Water Resources. The applicant, by Contract and Assignment, received the

right to divert 24825 acre-feet of water to irrigate 6206.25 acres. It was originally thought that a portion of this water would be used supplementally with existing rights, however now that the project is being refined, all of the water will be used on new land.

Using the depletion limit of 15143 acre-feet, and 3.0475 acre-feet depletion/acre of land, it was determined that 4969 acres of land could be irrigated under the contract. The annual diversion duty is 4.996 acre-feet/acre. Therefore, the hereafter portion of the change application is based on the above acreage, the depletion/acre and the diversion/acre. The depletion figures were taken from Research Report #145, Consumptive Use of Irrigated Crops in Utah, using the Green River date on page 212.

The annual depletion under this application is limited to 3531.14 acre-feet of water.

The water rights associated with the contract and original assignment and segregation under 41-3531 (A30414dw) have now been further segregated and changed to 92-638 (A30414dw) a27713; 91-5075 (A30414dw1) a27714; 93-3750 (A30414dw2) a27715.

SEGREGATION HISTORY*****

This Right was Segregated from 92-638, with Appl#: 30414dw1, Approval Date: 10/06/1959 under which Proof is to be submitted.

This Right as originally filed:

FLOW IN CFS	QUANTITY IN ACRE-FEET	*-----W A T E R U S E S-----*
	ACREAGE	DOMESTIC MUNICIPAL MINING POWER OTHER
	(ELUs)	(FAMILIES) (*-----ACRE-FEET-----*)

5788.9 1158.2070

A segregated portion of 92-638. Flaming Gorge project water

The following Water Rights have been Segregated from 91-5075:

(1) WRNUM: 91-5161 2625.398 525.5000
 APPL#: A30414dw1a
 NAME: Gunnison Butte Mutual Irrigation Company, et al.
 FILED: 12/24/2008 STATUS: UNAP
 APPR:

(2) WRNUM: 91-5162 281.22484 56.2900
 APPL#: A30414dw1b
 NAME: Gunnison Butte Mutual Irrigation Company, et al.
 FILED: 12/29/2008 STATUS: UNAP
 APPR:

Was segregated for 56.79 acres but 0.5 acre was returned to parent

CFS	ACRE-FEET	IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)	MUNICIPAL	MINING	POWER	OTHER

91-5075 currently has: 2882.27716 576.4170

PROTESTANTS*****

NAME: United States Bureau of Reclamation
 ADDR: c/o Curtis A. Pledger
 302 East 1860 South
 Provo, UT 84606-7317

NAME:
 ADDR:

APPLICATIONS FOR EXTENSIONS OF TIME WITHIN WHICH TO SUBMIT PROOF*****

FILED: 10/29/2009|PUB BEGAN: 06/22/2010|PUB ENDED: 06/29/2010|NEWSPAPER: Emery County Progress
 ProtestEnd:07/19/2010|PROTESTED: [No Hear]|HEARNG HLD: |SE ACTION: [Approved]|ActionDate:10/27/2011|PROOF DUE: 10/31/2020

*****E N D O F D A T A*****



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Agency List

Business

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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-113** APPLICATION/CLAIM NO.: **A11479** CERT. NO.: 4617

OWNERSHIP*****

NAME: Lee R. Thayne
 ADDR: Box 447
 Green River UT 84525
 INTEREST: 100%

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 11/17/1933|PRIORITY: 11/17/1933|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:03/21/1934|PROOF DUE:
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: 10/23/1969|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [91-5] |MAP: [144d] |PUB DATE:

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Proposed Determination Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 35.0 cfs
 SOURCE: Green River
 COUNTY: Emery COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) [N 1920 ft W 800 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [613973](#).

IRRIGATION: Sole Supply: 1362.71 acres of the Group Total of 1543.24 PERIOD OF USE: 04/01 TO 10/31

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*	
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE
Sec 20 T 20S R 16E SLBM	*			21.0000*			38.0000	8.6000*		29.1000		23.4000*	38.0000	
Sec 29 T 20S R 16E SLBM	*	1.3000	24.1000	35.6000	39.2000*	38.0000	15.3000	17.9000		39.5000	38.0000	40.0000	13.7000*	6.1000
Sec 30 T 20S R 16E SLBM	*				*			13.0000*					*	8.1000
Sec 31 T 20S R 16E SLBM	*				*	30.0000	32.7000	35.5000	0.7000*				*	26.0000
Sec 32 T 20S R 16E SLBM	*	24.1000			*				*		2.6000		*	
Sec 03 T 21S R 16E SLBM	*LOT 1													
Sec 04 T 21S R 16E SLBM	*LOT 1													
Sec 09 T 21S R 16E SLBM	*	40.0000	21.8000	40.0000	35.5000*			6.5000		40.0000	30.6000	23.5200	16.6200*	3.4000

GROU

 *****END OF DATA*****

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Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-4130** APPLICATION/CLAIM NO.: **A44455** CERT. NO.: CERTIFICAT
CHANGES: [a12054](#) (Filed: 05/11/1981) Certificate (Issued: 02/20/1998)

=====

OWNERSHIP*****

=====

NAME: Lee R. Thayn
ADDR: P.O. Box 447
Green River UT 84525

=====

DATES, ETC.*****

=====

LAND OWNED BY APPLICANT? Yes COUNTY TAX ID#:
FILED: 11/25/1974|PRIORITY: 11/25/1974|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/01/1975|PROOF DUE:
EXTENSION: |ELEC/PROOF:[Election]|ELEC/PROOF:06/03/1975|CERT/WUC: 02/20/1998|LAP, ETC: |LAPS LETTER:
RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
PD BOOK: [91-]|MAP: [[144d](#)] |PUB DATE:

TYPE -- DOCUMENT -- STATUS--
Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

=====

LOCATION OF WATER RIGHT*(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)**[GOOGLE VIEW](#)***

=====

FLOW: 600.0 cfs
SOURCE: Green River
COUNTY: Emery COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:
[\(1\) N 1920 ft W 800 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
Diverting Works: Open Canal (Race Way) Source:

Stream Alt Required?: No

POINT OF RETURN:
[\(1\) N 410 ft E 300 ft from S4 cor, Sec 17, T 20S, R 16E, SLBM](#)
Comment: Returned Water: 600.0 cfs

=====

USES OF WATER RIGHT*** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family**

=====

SUPPLEMENTAL GROUP NO.: [615048](#)
[91-4130 \(CERT\)](#)

.....
POWER: Thayn Hydro Hydro-Electric Power Plant, rated at 450 KW. PERIOD OF USE: 01/01 TO 12/31
CFS Contributed by this Right for this Use: Unevaluated

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*	*-----NORTH EAST QUARTER-----*	*-----SOUTH WEST QUARTER-----*	*-----SOUTH EAST QUARTER-----*
	* NW NE SW SE *	* NW NE SW SE *	* NW NE SW SE *	* NW NE SW SE *
Sec 17 T 20S R 16E SLBM	* *	* *	* *	* *

*=====

SUPPLEMENTAL GROUP NO.: [615169](#) Water Rights Appurtenant to the following use(s):
[91-4130 \(CERT\)](#), [4273 \(LAP\)](#)

.....
POWER: Unnamed Hydro-Electric Power Plant, rated at 2000 KW. PERIOD OF USE: 01/01 TO 12/31
CFS Contributed by this Right for this Use: Unevaluated

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*	*-----NORTH EAST QUARTER-----*	*-----SOUTH WEST QUARTER-----*	*-----SOUTH EAST QUARTER-----*
	* NW NE SW SE *	* NW NE SW SE *	* NW NE SW SE *	* NW NE SW SE *
Sec 17 T 20S R 16E SLBM	* *	* *	* *	* *

*****E N D O F D A T A*****



Online Services

Agency List

Business

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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **91-5161** APPLICATION/CLAIM NO.: **A30414dw1a** CERT. NO.: CERTIFICAT
 CHANGES: [a27714a](#) (Filed: 04/03/2003) Amended by Subsequent Change
[a35184](#) (Filed: 12/24/2008) Certificate (Issued: 04/14/2010)

OWNERSHIP*****

NAME: Lee Thayn
 ADDR: P.O. Box 447
 Green River, UT 84525
 INTEREST: 100%

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 04/14/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: [
 PD BOOK: [91-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)**[GOOGLE VIEW](#)*

FLOW: 3153.0 acre-feet
 SOURCE: Green River
 COUNTY: Emery COMMON DESCRIPTION: 2 miles N of Green River City

POINT OF DIVERSION -- SURFACE:

(1) [S 500 ft E 4330 ft from W4 cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works: Tusher Diversion Dam

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [629865](#)

IRRIGATION: 525.5 acres PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----

	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SE
Sec 04 T 21N R 16E SLBM	*				*				*				*		
Sec 04 T 21N R 16E SLBM *LOT 10									X		X	X	X		
Sec 04 T 21N R 16E SLBM *LOT 11															
Sec 04 T 21N R 16E SLBM *LOT 12															
Sec 04 T 21N R 16E SLBM *LOT 13															
Sec 04 T 21N R 16E SLBM *LOT 19															
Sec 04 T 21N R 16E SLBM *LOT 7															
Sec 04 T 21N R 16E SLBM *LOT 9															
Sec 05 T 21N R 16E SLBM	*			*				*			X	X	X	*X	X
Sec 05 T 21N R 16E SLBM *LOT 13															
Sec 05 T 21N R 16E SLBM *LOT 14															
Sec 05 T 21N R 16E SLBM *LOT 15															
Sec 05 T 21N R 16E SLBM *LOT 16															
Sec 05 T 21N R 16E SLBM *LOT 17															
Sec 05 T 21N R 16E SLBM *LOT 18															
Sec 05 T 21N R 16E SLBM *LOT 19															
Sec 05 T 21N R 16E SLBM *LOT 20															

GROU

OTHER COMMENTS*****

This right is limited to the annual depletion of 1601.46 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [91-5075](#), with Appl#: A30414dw1a, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	WATER USES						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)			ACRE-FEET	
	2625.398	525.5000						

 *****END OF DATA*****



(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-43** APPLICATION/CLAIM NO.: **A4792** CERT. NO.: 224

OWNERSHIP*****

NAME: Chris Dunham
 ADDR: PO Box 193
 Green River UT 84525
 INTEREST: 20%
 REMARKS: 12 cfs: 1/5th interest

NAME: Howard Hastings
 ADDR: Green River UT 84525
 INTEREST: 60%
 REMARKS: 36 cfs

NAME: H. Clark Ross
 ADDR: 10675 South Haven Street
 Las Vegas NV 89183
 INTEREST: 20%
 REMARKS: 12 cfs

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 07/29/1912|PRIORITY: 07/29/1912|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:05/05/1913|PROOF DUE:
 EXTENSION: |ELEC/PROOF:[]|ELEC/PROOF: |CERT/WUC: |LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-7] |MAP: [[6d](#)] |PUB DATE: 06/01/1978

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Proposed Determination Status: Certificate

LOCATION OF WATER RIGHT*** (Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 60.0 cfs
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:
[\(1\) N 1840 ft W 150 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616398](#).

POWER: Unnamed Hydro-Electric Power Plant, rated at 7 KW. PERIOD OF USE: 01/01 TO 12/31
 CFS Contributed by this Right for this Use: 43438.79882

 *****END OF DATA*****



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Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-74** APPLICATION/CLAIM NO.: **D2235** CERT. NO.:

OWNERSHIP*****

NAME: Chris Dunham
 ADDR: P.O. Box 193
 Green River, Utah 84525
 INTEREST: 20%
 REMARKS: 16.48 acres

NAME: Howard Hastings
 ADDR: Green River UT 84525
 INTEREST: 60%
 REMARKS: 49.44 acres

NAME: H. Clark Ross
 ADDR: 10675 South Haven Street
 Las Vegas NV 89183
 INTEREST: 20%
 REMARKS: 16.48 acres

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 10/09/1969|PRIORITY: / /1879|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [|ActionDate: |PROOF DUE:
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: |LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-7] |MAP: [6d] |PUB DATE: 06/01/1978

TYPE -- DOCUMENT -- STATUS--

Type of Right: Diligence Claim

Source of Info: Proposed Determination

Status:

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)**[GOOGLE VIEW](#)*

FLOW: 5.0 cfs
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:
[\(1\) N 1840 ft W 150 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616623](#).

IRRIGATION: 82.4 acres PERIOD OF USE: 04/01 TO 11/15

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*			
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE		
Sec 16 T 20S R 16E SLBM	3.0000		41.2000	10.6000					19.1000	0.3000						
Sec 17 T 20S R 16E SLBM						0.5000		7.7000								

GROU

 *****END OF DATA*****



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Agency List

Business

Search

Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-620** APPLICATION/CLAIM NO.: **F70415** CERT. NO.: CERTIFICAT

OWNERSHIP*****

NAME: Sequoiadendron, LLC
 ADDR: 108 West 13th Street
 Wilmington, Delaware 19801

DATES, ETC.*****

LAND OWNED BY APPLICANT? Yes COUNTY TAX ID#:
 FILED: 10/02/1996|PRIORITY: 10/02/1996|PUB BEGAN: 10/22/1996|PUB ENDED: 10/29/1996|NEWSPAPER: Emery County Progress
 ProtestEnd:11/18/1996|PROTESTED: [No]|HEARNG HLD: |SE ACTION: [Approved]|ActionDate:01/29/1997|EXTENSION:
 LAP, ETC: 01/29/2017|LAPS LETTR: |RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Fixed-Time Application Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 2.71 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 5 mi. North of Green River

POINT OF DIVERSION -- SURFACE:

(1) [N 1809 ft W 210 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616589](#).

IRRIGATION: 0.43 acres PERIOD OF USE: 03/15 TO 11/15

STOCKWATER: 20.0000 Stock Units PERIOD OF USE: 01/01 TO 12/31

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*
 * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE *
[Sec 17 T 20S R 16E SLBM](#) * | | | | * | | | | * | | | | * | | | | * | | | |
 GROU

PLACE OF USE for STOCKWATERING*****

	NORTH-WEST¼				NORTH-EAST¼				SOUTH-WEST¼				SOUTH-EAST¼				
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	
Sec 17 T 20S R 16E SLBM	*	:	:	:	*	:	:	:	*	:	:	:	*	:	:	:	X*

OTHER COMMENTS*****

This right is only approved for a fixed-time of 20 years (01/29/2017).This date is subject to possible extension under Section 73-3-8 of the Utah Code Annotated, (1989 & Supp. 1998).

*****E N D O F D A T A*****

Utah Division of Water Rights | 1594 West North Temple Suite 220, P.O. Box 146300, Salt Lake City, Utah 84114-6300 | 801-538-7240

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Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-657** APPLICATION/CLAIM NO.: **A30414dwc** CERT. NO.: CERTIFICAT
 CHANGES: [a27713c](#) (Filed: 04/04/2003) Amended by Subsequent Change
[a35183](#) (Filed: 12/24/2008) Certificate (Issued: 04/14/2010)

OWNERSHIP*****

NAME: J. D. Banasky
 ADDR: P. O. Box 728
 Price, UT 84501

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: 10/29/2009|ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 04/14/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: [
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--
 Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 801.5946 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 3 miles N of Green River City

POINT OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works: East Side Canal

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [629819](#).

IRRIGATION: 131.884 acres PERIOD OF USE: 03/15 TO 11/15

OTHER: Maintenance of three storage reservoirs inundating 3.116 acres. PERIOD OF USE: 01/01 TO 12/31

Acre Feet Contributed by this Right for this Use: 10.2906

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*
 * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE *
[Sec 32 T 20S R 16E SLBM](#) * | | | | * | X | | | * | | | | * | | | |
 Sec 32 T 20S R 16E SLBM *LOT 10
 Sec 32 T 20S R 16E SLBM *LOT 11
 Sec 32 T 20S R 16E SLBM *LOT 12
 Sec 32 T 20S R 16E SLBM *LOT 14
 Sec 32 T 20S R 16E SLBM *LOT 9
[Sec 33 T 20S R 16E SLBM](#) *X | | | | * | | | | *X | | | | * | | | |
 Sec 33 T 20S R 16E SLBM *LOT 4
 Sec 03 T 21S R 16E SLBM *LOT 25

GROT

Storage from 01/01 to 12/31, inclusive, in Pond #1 with a maximum capacity of 4.050 acre-feet, located in:

Height of Dam: NORTH-WEST¼ NORTH-EAST¼ SOUTH-WEST¼ SOUTH-EAST¼
 Area Inundated: 1.15 NW NE SW SE NW NE SW SE NW NE SW SE NW NE SW SE
 Sec 32 T 20S R 16E SLBM *LOT 12

Storage from 01/01 to 12/31, inclusive, in Pond #2 with a maximum capacity of 4.600 acre-feet, located in:

Height of Dam: NORTH-WEST¼ NORTH-EAST¼ SOUTH-WEST¼ SOUTH-EAST¼
 Area Inundated: 1.31 NW NE SW SE NW NE SW SE NW NE SW SE NW NE SW SE
 Sec 32 T 20S R 16E SLBM *LOT 10
 Sec 32 T 20S R 16E SLBM *LOT 11
 Sec 32 T 20S R 16E SLBM *LOT 12
 Sec 32 T 20S R 16E SLBM *LOT 9

Storage from 01/01 to 12/31, inclusive, in Pond #3 with a maximum capacity of 2.260 acre-feet, located in:

Height of Dam: NORTH-WEST¼ NORTH-EAST¼ SOUTH-WEST¼ SOUTH-EAST¼
 Area Inundated: 0.64 NW NE SW SE NW NE SW SE NW NE SW SE NW NE SW SE
 Sec 32 T 20S R 16E SLBM *LOT 10
 Sec 32 T 20S R 16E SLBM *LOT 11

Small Dam Required?: No

OTHER COMMENTS*****

This right is limited to the annual depletion of 412.2071 acre-feet.

SEGREGATION HISTORY

This Right was Segregated from 92-638, with Appl#: A30414dw, Approval Date: 10/06/1959 under which Proof is to be submitted.
This Right as originally filed:

FLOW IN CFS	QUANTITY IN ACRE-FEET	*-----W A T E R U S E S-----*						
		IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)	MUNICIPAL	MINING	POWER	OTHER
	675.9588	135.3000						
*****E N D O F D A T A*****								



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Business

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Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-661** APPLICATION/CLAIM NO.: **A30414dwg** CERT. NO.: CERTIFICAT
 CHANGES: [a27713g](#) (Filed: 04/04/2003) Certificate (Issued: 04/14/2010)

OWNERSHIP*****

NAME: Glen Clark or Ester Clark
 ADDR: P. O. Box 352
 Green River, UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 04/14/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate

Source of Info: Certificate

Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 32.82 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 4 miles N of Green River City

POINT OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works: East Side Canal

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [629610](#).

IRRIGATION: 5.47 acres

PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*

* NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE |
 Sec 29 T 20S R 16E SLBM *LOT 6
 Sec 29 T 20S R 16E SLBM *LOT 7

GROL

OTHER COMMENTS*****

This right is limited to the annual depletion of 16.6698 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [92-638](#), with Appl#: A30414dw, Approval Date: 10/06/1959 under which Proof is to be submitted.

This Right as originally filed:

FLOW IN	QUANTITY IN	WATER USES						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
	ACREAGE	(ELUs)	(FAMILIES)	ACRE-FEET				
	27.3281	5.4700						

 *****END OF DATA*****



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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-656** APPLICATION/CLAIM NO.: **A30414dwb** CERT. NO.: CERTIFICAT
 CHANGES: [a27713b](#) (Filed: 12/24/2008) Amended by Subsequent Change
[a35181](#) (Filed: 12/24/2008) Amended by Subsequent Change
[a36057](#) (Filed: 11/03/2009) Certificate (Issued: 07/21/2010)

OWNERSHIP*****

NAME: Chris Dunham
 ADDR: P. O. Box 193
 Green River, UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARING HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: 10/29/2009|ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 07/21/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--*****

Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 521.82 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 6.5 mi. N of Green River City

POINTS OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: East Side Canal Source:
 (2) [N 1924 ft W 145 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: Pump to irrigation line Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [630527](#). Water Rights Appurtenant to the following use(s):
[92-656\(CERT\)](#), [667\(CERT\)](#)

IRRIGATION: Sole Supply: 86.97 acres of the Group Total of 98.36 PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*
 * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE *
[Sec 16 T 20S R 16E SLBM](#) * | | | | 23.1700* | | | | | | | | 32.2800|16.3900|16.6500* | | | |
 Sec 16 T 20S R 16E SLBM *LOT 2
 Sec 16 T 20S R 16E SLBM *LOT 5

GROL

OTHER COMMENTS*****

This right is limited to the annual depletion of 265.0411 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [92-638](#), with Appl#: A30414dw, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	W A T E R U S E S							
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER	
	ACREAGE	(ACREAGE)	(ELUs)	(FAMILIES)	(FAMILIES)	(FAMILIES)	(FAMILIES)	(FAMILIES)	(FAMILIES)
	434.5021	86.9700							

PROTESTANTS*****

NAME: United States Bureau of Reclamation NAME:
 ADDR: c/o Bruce C. Barrett ADDR:
 302 East 1860 South
 Provo, UT 84606-7317

 *****END OF DATA*****



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-667** APPLICATION/CLAIM NO.: **A30414dwi** CERT. NO.: CERTIFICAT
 CHANGES: [a27713i](#) (Filed: 04/04/2003) Amended by Subsequent Change
[a36057](#) (Filed: 11/03/2009) Certificate (Issued: 07/21/2010)

OWNERSHIP*****

NAME: Chris Dunham
 ADDR: P. O. Box 193
 Green River, UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 11/02/2009|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: []|ActionDate: |PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:11/02/2009|CERT/WUC: 07/21/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--
 Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 68.34 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 6.5 mi. N of Green River City

POINTS OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: East Side Canal
 (2) [N 1924 ft W 145 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: Pump to irrigation line

Source:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [630527](#). Water Rights Appurtenant to the following use(s):
[92-656\(CERT\)](#), [667\(CERT\)](#)

IRRIGATION: Sole Supply: 11.39 acres of the Group Total of 98.36 PERIOD OF USE: 03/15 TO 11/15
 ###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*
 * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE *
[Sec 16 T 20S R 16E SLBM](#) * | | | | 23.1700 * | | | | * | | | | 32.2800 | 16.3900 | 16.6500 * | | | |
 Sec 16 T 20S R 16E SLBM *LOT 2
 Sec 16 T 20S R 16E SLBM *LOT 5

GROT

OTHER COMMENTS*****

This right is limited to the annual depletion of 34.7111 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [92-638](#), with Appl#: A30414dwi, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	WATER USES						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)			ACRE-FEET	
	491.4066	98.3600						

Seg'd for proof to be filed

 *****END OF DATA*****



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-660** APPLICATION/CLAIM NO.: **A30414dwf** CERT. NO.: CERTIFICAT
 CHANGES: [a27713f](#) (Filed: 04/04/2003) Certificate (Issued: 04/14/2010)

OWNERSHIP*****

NAME: Kirk and Paula Dunham
 ADDR: P. O. Box 540
 Green River, UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 04/14/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 86.64 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 5.5 mi. N of Green River City

POINT OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: East Side Canal

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [629571](#).

IRRIGATION: 14.44 acres

PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE:

-----NORTH WEST QUARTER-----				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*				
* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	
Sec 21 T 20S R 16E SLBM	*							*				*				*
		14.4400														

GROT

DIVERSION & DEPLETION ESTIMATES*****

(All values in acre-feet, Growing Season in days)						MANUALLY ACRE-FEET DIVERSION DEPLETION GROWING WATER-USE					
IRRIGATION	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER	EVALUATED	EXPORTED	DUTY	DUTY	SEASON REPORTING
DIV: 72.200							No		5.00	3.05	157
DEP: 43.982											

OTHER COMMENTS*****

This right is limited to the annual depletion of 44.0059 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [92-638](#), with Appl#: A30414dw, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	*-----W A T E R U S E S-----*						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)	(FAMILIES)	(FAMILIES)	ACRE-FEET	(FAMILIES)
	72.1422	14.4400						

 *****E N D O F D A T A*****



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Business

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Utah Division of Water Rights



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-659** APPLICATION/CLAIM NO.: **A30414dwe** CERT. NO.: CERTIFICAT
 CHANGES: [a27713e](#) (Filed: 04/04/2003) Certificate (Issued: 04/14/2010)

OWNERSHIP*****

NAME: Nancy Dunham
 ADDR: P. O. Box 540
 Green River, UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: 10/29/2009|ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 04/14/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate

Source of Info: Certificate

Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 522.6 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 6 miles N of Green River City

POINT OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works: East Side Canal

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [629570](#).

IRRIGATION: 87.1 acres

PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*				
	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	
Sec 16 T 20S R 16E SLBM	*				*				*				*				
Sec 21 T 20S R 16E SLBM	*X	X			*				*				*				

GROU

OTHER COMMENTS*****

This right is limited to the annual depletion of 265.4373 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [92-638](#), with Appl#: A30414dw, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	*-----W A T E R U S E S-----*						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
	ACREAGE	(ELUs)	(FAMILIES)	(*-----ACRE-FEET-----*)				
	435.1516	87.1000						

 *****END OF DATA*****



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-658** APPLICATION/CLAIM NO.: **A30414dwd** CERT. NO.: CERTIFICAT
 CHANGES: [a27713d](#) (Filed: 04/04/2003) Certificate (Issued: 04/14/2010)

OWNERSHIP*****

NAME: Harold W. Nelson
 ADDR: P. O. Box 516
 Green River, UT 84525

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 12/24/2008|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:04/06/2009|PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:12/24/2008|CERT/WUC: 04/14/2010|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate

Source of Info: Certificate

Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 37.26 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 5.5 mi. N of Green River City

POINT OF DIVERSION -- SURFACE:

(1) [N 1914 ft W 148 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works: East Side Canal

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [629572](#).

IRRIGATION: 6.21 acres

PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE:

-----NORTH WEST QUARTER-----				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*			
* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE
Sec 21 T 20S R 16E SLBM				6.2100*											

GROT

OTHER COMMENTS*****

This right is limited to the annual depletion of 18.9250 acre-feet.

SEGREGATION HISTORY*****

This Right was Segregated from [92-638](#), with Appl#: A30414dw, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	*-----W A T E R U S E S-----*						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)			ACRE-FEET	
	31.0252	6.2100						

 *****E N D O F D A T A*****

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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-633** APPLICATION/CLAIM NO.: **A30414dp** CERT. NO.:CHANGES: [a26231](#) (Filed: 12/24/2001) Amended by Subsequent Change[t31872](#) (Filed: 08/24/2006) Lapsed[a31873](#) (Filed: 08/24/2006) Approved[a36972](#) (Filed: 11/04/2010) Unapproved

OWNERSHIP*****

NAME: Eastside High Ditch Irrigation Company
ADDR: Attn: Tim Vetere
P.O. Box 404
Green River UT 84525NAME: State of Utah Board of Water Resources
ADDR: Box 146201
Salt Lake City UT 84114-6201

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
FILED: 12/24/2001|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:10/06/1959|PROOF DUE: 10/31/2009
EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:01/28/2009|CERT/WUC: |LAP, ETC: |LAPS LETTER:
RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: [|50YR DATE: 10/06/2009
PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Application to Segregate Status: Approved

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*FLOW: 4900.0 acre-feet
SOURCE: Green River
COUNTY: Daggett COMMON DESCRIPTION: Flaming Gorge Dam

POINTS OF DIVERSION -- SURFACE:

[\(1\) S 56 ft E 105 ft from N4 cor, Sec 16, T 20S, R 16E, SLBM](#)

Diverting Works: Pump & Pipeline

Source: Green River

[\(2\) N 1920 ft W 80 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [631588](#).

IRRIGATION: Sole Supply: 980.0 acres of the Group Total of 1560.0 PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*	
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE
Sec 10 T 20S R 16E SLBM	*				*				*				*	
Sec 15 T 20S R 16E SLBM	*X	X	X	X	*				*X	X	X	X	*X	X
Sec 16 T 20S R 16E SLBM	*X	X	X	X	*X	X	X	X	*X	X	X	X	*X	X
Sec 21 T 20S R 16E SLBM	*X	X	X	X	*X	X	X	X	*	X	X	X	*X	X
Sec 22 T 20S R 16E SLBM	*X	X			*X	X			*				*	
Sec 26 T 20S R 16E SLBM	*X	X	X	X	*X	X	X	X	*X	X	X	X	*X	X
Sec 27 T 20S R 16E SLBM	*X		X	X	*	X	X	X	*X	X	X	X	*X	X
Sec 28 T 20S R 16E SLBM	*				*	X		X	*				*	X

GROT

SEGREGATION HISTORY*****

This Right was Segregated from [41-3479](#), with Appl#: A30414dp, Approval Date: 10/06/1959 under which Proof is to be submitted.

This Right as originally filed:

FLOW IN	QUANTITY IN	*-----W A T E R U S E S-----*						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)				
	4900.0	980.0000						

Segregated portion of Flaming Gorge Water.

APPLICATIONS FOR EXTENSIONS OF TIME WITHIN WHICH TO SUBMIT PROOF*****

FILED: 02/04/1999|PUB BEGAN: 02/24/1999|PUB ENDED: 03/03/1999|NEWSPAPER: Vernal Express
ProtestEnd:03/23/1999|PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:05/13/1999|PROOF DUE: 10/31/2009

*****E N D O F D A T A*****

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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-4** APPLICATION/CLAIM NO.: **A795** CERT. NO.: 1244

OWNERSHIP*****

NAME: East Side Irrigation Company
 ADDR: C/O Howard Silliman
 Green River UT 84525
 INTEREST: 100%

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 02/08/1906|PRIORITY: 02/08/1906|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:12/31/1906|PROOF DUE:
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: 01/13/1923|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-7] |MAP: [6d] |PUB DATE: 06/01/1978

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Proposed Determination Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 6.33 cfs
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) [N 1920 ft W 80 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616367](#).

IRRIGATION: 277.9 acres

PERIOD OF USE: 03/15 TO 10/31

###PLACE OF USE:

	-----NORTH WEST QUARTER-----				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*	
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE
Sec 21 T 20S R 16E SLBM	*				*				*				*	
Sec 28 T 20S R 16E SLBM	*	1.8000			*				*				*	
Sec 29 T 20S R 16E SLBM	*				*				*				*	
Sec 32 T 20S R 16E SLBM	*				*	16.5000	40.0000	25.2000	35.7000	*			*	11.0000
Sec 33 T 20S R 16E SLBM	*	6.2000		22.5000	*				*	8.3000		6.2000	*	

GROU

 *****END OF DATA*****



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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-638** APPLICATION/CLAIM NO.: **A30414dw** CERT. NO.:
 CHANGES: [a27713](#) (Filed: 04/03/2003) Approved

OWNERSHIP*****

NAME: Gunnison Butte Mutual Irrigation Company
 ADDR: P.O. Box 447
 Green River UT 84525

NAME: State of Utah Board of Water Resources
 ADDR: Box 146201
 Salt Lake City UT 84114-6201

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 02/28/2000|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:10/06/1959|PROOF DUE: 10/31/2020
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:10/30/2008|CERT/WUC: |LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []|50YR DATE: 10/06/2009
 PD BOOK: [92-]|MAP: []|PUB DATE:

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Application to Segregate Status: Approved

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 8238.9054 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: Flaming Gorge Dam

POINTS OF DIVERSION -- SURFACE:

(1) N 621 ft W 847 ft from SE cor, Sec 09, T 20S, R 16E, SLBM	Source:
Diverting Works: Crovo Pump	
(2) N 1920 ft W 80 ft from SE cor, Sec 17, T 20S, R 16E, SLBM	Source:
Diverting Works: Eastside Diversion	
(3) N 2090 ft W 1670 ft from E4 cor, Sec 03, T 21S, R 16E, SLBM	Source:
Diverting Works: Bookcliff Pump	
(4) S 1890 ft E 1380 ft from NW cor, Sec 15, T 21S, R 16E, SLBM	Source:
Diverting Works: Vetere Pump	
(5) S 1420 ft W 2661 ft from NE cor, Sec 34, T 21S, R 16E, SLBM	Source:
Diverting Works: Quinn Pump	
(6) N 1285 ft W 2647 ft from SE cor, Sec 16, T 22S, R 16E, SLBM	Source:
Diverting Works: Uptain Pump	
(7) S 4051 ft W 2638 ft from NE cor, Sec 28, T 22S, R 16E, SLBM	Source:
Diverting Works: G. Dunham Pump	
(8) S 2723 ft W 2738 ft from NE cor, Sec 31, T 23S, R 17E, SLBM	Source:
Diverting Works: Ruby Ranch Pump	

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [631169](#)

IRRIGATION: Sole Supply: 1472.3817 acre of the Group Total of 2450.1617 PERIOD OF USE: 04/01 TO 10/31

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----*

	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE
Sec 09 T 20S R 16E SLBM *LOT 7														
Sec 16 T 20S R 16E SLBM *														
Sec 21 T 20S R 16E SLBM *X	X		X	X										
Sec 29 T 20S R 16E SLBM *LOT 6														
Sec 29 T 20S R 16E SLBM *LOT 7														
Sec 32 T 20S R 16E SLBM *					X	X	X	X					X	X
Sec 33 T 20S R 16E SLBM *									X	X	X	X		
Sec 01 T 21S R 16E SLBM *									X	X	X	X	X	X
Sec 01 T 21S R 16E SLBM *LOT 17														
Sec 01 T 21S R 16E SLBM *LOT 18														
Sec 01 T 21S R 16E SLBM *LOT 19														
Sec 01 T 21S R 16E SLBM *LOT 20														
Sec 03 T 21S R 16E SLBM *					X	X	X	X						
Sec 11 T 21S R 16E SLBM *					X	X	X	X					X	X
Sec 12 T 21S R 16E SLBM *X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sec 13 T 21S R 16E SLBM *					X	X								
Sec 15 T 21S R 16E SLBM *							X	X					X	
Sec 34 T 21S R 16E SLBM *LOT 2														
Sec 05 T 21S R 17E SLBM *									X	X	X	X	X	X
Sec 06 T 21S R 17E SLBM *													X	X

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OTHER COMMENTS*****

GENERAL:

The water rights associated with the contract and original assignment and segregation under 41-3531 (A30414dw) have now been further segregated and changed to 92-638 (A30414dw)a27713; 91-5075 (A30414dw1) a27714; 93-3750 (A30414dw2) a27715.

SEGREGATION HISTORY*****

This Right as originally filed:

To change the drainage area number from 41-Area to the 92-Area.

APPL#: A30414dw1
NAME: State of Utah Board of Water Resources
FILED: 04/01/2003 STATUS: UNAP
APPR:

APPL#: A30414dw2
NAME: State of Utah Board of Water Resources
FILED: 04/01/2003 STATUS: UNAP
APPR:

APPL#: A30414dwa
NAME: State Of Utah Board of Water Resources
FILED: 10/30/2008 STATUS: UNAP
APPR:

APPL#: A30414dwc
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 12/24/2008 STATUS: UNAP
APPR:

APPL#: A30414dwe
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 12/24/2008 STATUS: UNAP
APPR:

NAME: Gunnison Butte Mutual Irrigation Company, et al.

FILED: 12/24/2008 STATUS: UNAP
APPR: Together with 16.6698 acre-feet depletion

(7) WRNUM: [92-656](#) 521.82 86.9700
APPL#: A30414dwb
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 12/24/2008 STATUS: UNAP
APPR: Together with 265.0411 acre-feet depletion

(8) WRNUM: [92-658](#) 37.26 6.2100
APPL#: A30414dwd
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 12/24/2008 STATUS: UNAP
APPR: Together with 18.925 acre-feet depletion

(9) WRNUM: [92-660](#) 86.64 14.4400
APPL#: A30414dwd
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 12/24/2008 STATUS: UNAP
APPR: Together with 44.0059 acre-feet depletion

(10) WRNUM: [92-662](#) 65.7 10.9500
APPL#: A30414dwh
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 12/24/2008 STATUS: UNAP
APPR: Together with 33.3701 acre-feet depletion

(11) WRNUM: [92-667](#) 68.34 11.3900
APPL#: A30414dwi
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 11/02/2009 STATUS: UNAP
APPR: Together with 34.7111 acre-feet depletion

(12) WRNUM: [92-670](#) 3761.12 940.2800
APPL#: A30414dwj
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 11/02/2010 STATUS: UNAP
APPR: Together with 34.7111 acre-feet depletion

(13) WRNUM: [92-671](#) 225.0 37.5000
APPL#: A30414dwm
NAME: Gunnison Butte Mutual Irrigation Company, et al.
FILED: 03/01/2011 STATUS: UNAP
APPR:

	CFS	ACRE-FEET	IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)	MUNICIPAL	MINING	POWER	OTHER
92-638 currently has: -		8238.9054	1204.0160						

PROTESTANTS*****

NAME: Green River Canal Company
ADDR: c/o Dean King
PO Box 84
Green River, UT 84525

NAME:
ADDR:

APPLICATIONS FOR EXTENSIONS OF TIME WITHIN WHICH TO SUBMIT PROOF*****

FILED: 10/29/2009|PUB BEGAN: 11/23/2010|PUB ENDED: 11/30/2010|NEWSPAPER: Emery County Progress
ProtestEnd:12/20/2010|PROTESTED: [No Hear]|HEARNG HLD: |SE ACTION: [Approved]|ActionDate:03/15/2011|PROOF DUE: 10/31/2020

*****E N D O F D A T A*****

Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-69** APPLICATION/CLAIM NO.: **A38290** CERT. NO.:
CHANGES: a6932 (Filed:) Water User's Claim (Issued:)

OWNERSHIP*****

NAME: T. J. Hastings
ADDR: Green River UT 84525
INTEREST: 100%

 DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:

FILED: 06/07/1967	PRIORITY: 06/07/1967	PUB BEGAN:	PUB ENDED:	NEWSPAPER:
ProtestEnd:	PROTESTED: [No]	HEARING HLD:	SE ACTION: [ActionDate: 11/21/1967
EXTENSION:	ELEC/PROOF: [ELEC/PROOF:	CERT/WUC:	LAP, ETC:
RUSH LETTR:	RENOVATE:	RECON REQ:	TYPE: [LAPS LETTER:
PD BOOK: [92-7	MAP: [6d	PUB DATE: 06/01/1978		

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate	Source of Info: Proposed Determination	Status: Water User's Claim
---	--	----------------------------

LOCATION OF WATER RIGHT*** (Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 1.0 cfs

SOURCE: Green River

COUNTY: Grand COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) N 1920 ft W 80 ft from SE cor. Sec 17, T 20S, R 16E, SLBM

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: 616620.

IRRIGATION: 39.7 acres

PERIOD OF USE: 04/01 TO 10/31

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*	
	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE
Sec 17 T 20S R 16E SLBM	*				*				*				*	
Sec 20 T 20S R 16E SLBM	*				*	16.2000			*				*	

*****END OF DATA*****



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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-21** APPLICATION/CLAIM NO.: **A11251** CERT. NO.: 2364

OWNERSHIP*****

NAME: Bruce E. and Dorothy R. Nelson
 ADDR: P. O. Box 307
 Green River UT 84525
 INTEREST: 100%
 REMARKS: (joint tenants)

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 05/16/1932|PRIORITY: 05/16/1932|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:08/10/1933|PROOF DUE:
 EXTENSION: |ELEC/PROOF:[] |ELEC/PROOF: |CERT/WUC: |LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-7] |MAP: [6d] |PUB DATE: 06/01/1978

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Water User's Claim Status: Certificate

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)**[GOOGLE VIEW](#)*

FLOW: 1.5 cfs
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) N 1920 ft W 80 ft from SE cor, Sec 17, T 20S, R 16E, SLBM
 Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: 616229.

.....
 IRRIGATION: Sole Supply: 97.0 acres of the Group Total of 99.4 PERIOD OF USE: 03/01 TO 10/31

 ###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----
 * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE
Sec 21 T 20S R 16E SLBM * | | | | * | | | | * 42.7000|26.4000|30.3000| | * | | | | | GROU

 *****END OF DATA*****



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Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-646** APPLICATION/CLAIM NO.: **A30414ddb** CERT. NO.: CERTIFICAT

CHANGES: [a21692](#) (Filed: 11/18/1997) Amended by Subsequent Change
[a24470](#) (Filed: 05/10/2000) Withdrawn
[a30882](#) (Filed: 12/15/2005) Withdrawn
[a31738](#) (Filed: 07/19/2006) Certificate (Issued: 05/09/2012)

OWNERSHIP*****

NAME: State of Utah School and Institutional Trust Lands Administration
 ADDR: 675 East 500 South, Suite 500
 Salt Lake City, UT 84102-2810

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 11/17/1997|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:10/06/1959|PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:10/01/2008|CERT/WUC: 05/09/2012|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 526.12 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION:

POINT OF DIVERSION -- SURFACE:

(1) [N 1920 ft W 80 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616614](#). Water Rights Appurtenant to the following use(s):
[92-645\(CERT\)](#), [646\(CERT\)](#)

IRRIGATION: Sole Supply: 87.6866 acres of the Group Total of 96.3333 PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*			
	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SW	SE	NW	NE	SE	
Sec 23 T 20S R 16E SLBM	*				*				*				*			
Sec 26 T 20S R 16E SLBM	*X				*				*				*			
Sec 27 T 20S R 16E SLBM	*			X	*X	X	X		*				*			

GROT

SEGREGATION HISTORY*****

This Right was Segregated from [41-3491](#), with Appl#: A30414dd, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	-----W A T E R U S E S-----*					
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUS)	(FAMILIES)		ACRE-FEET	
	526.12						

To be used for a Development Project at Bullfrog.

APPLICATIONS FOR EXTENSIONS OF TIME WITHIN WHICH TO SUBMIT PROOF*****

FILED: 06/25/2001|PUB BEGAN: 01/03/2002|PUB ENDED: 01/10/2002|NEWSPAPER: Garfield County News
 ProtestEnd:01/30/2002|PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:03/28/2002|PROOF DUE: 10/31/2003

FILED: 10/29/2003|PUB BEGAN: 12/04/2003|PUB ENDED: 12/11/2003|NEWSPAPER: Garfield County News
 ProtestEnd:12/31/2003|PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:01/15/2004|PROOF DUE: 10/31/2005

FILED: 10/31/2005|PUB BEGAN: 12/08/2005|PUB ENDED: 12/15/2005|NEWSPAPER: The Garfield County Insider
 ProtestEnd:01/04/2006|PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:05/24/2006|PROOF DUE: 10/31/2009

*****E N D O F D A T A*****



Online Services Agency List Business

Search

Utah Division of Water Rights



Select Related Information

(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-645** APPLICATION/CLAIM NO.: **A30414dd** CERT. NO.: CERTIFICAT
 CHANGES: [a30882](#) (Filed: 12/15/2005) Withdrawn
[a31738](#) (Filed: 07/19/2006) Certificate (Issued: 05/09/2012)

OWNERSHIP*****

NAME: State of Utah School and Institutional Trust Lands Administration
 ADDR: 675 East 500 South, Suite 500
 Salt Lake City, UT 84102-2810

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 04/23/1997|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER: No Adv Required
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:10/06/1959|PROOF DUE: 10/31/2009
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:10/01/2008|CERT/WUC: 05/09/2012|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: [
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--
 Type of Right: Application to Appropriate Source of Info: Certificate Status: Certificate

LOCATION OF WATER RIGHT***(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 51.88 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: Flaming Gorge Dam

POINT OF DIVERSION -- SURFACE:

[\(1\) N 1920 ft W 80 ft from SE cor, Sec 17, T 20S, R 16E, SLBM](#)
 Diverting Works:

Source:

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616614](#). Water Rights Appurtenant to the following use(s):
[92-645\(CERT\)](#), [646\(CERT\)](#)

IRRIGATION: Sole Supply: 8.6467 acres of the Group Total of 96.33333 PERIOD OF USE: 03/15 TO 11/15

###PLACE OF USE: *-----NORTH WEST QUARTER-----*-----NORTH EAST QUARTER-----*-----SOUTH WEST QUARTER-----*-----SOUTH EAST QUARTER-----
 * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE * NW | NE | SW | SE
[Sec 23 T 20S R 16E SLBM](#) * | | | | * | | | | * | | | | X | | | |
[Sec 26 T 20S R 16E SLBM](#) *X | | | | * | | | | * | | | | * | | | |
[Sec 27 T 20S R 16E SLBM](#) * | | | | X *X | X | X | * | | | | * | | | |

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SEGREGATION HISTORY*****

This Right was Segregated from [41-3479](#), with Appl#: A30414d, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN CFS	QUANTITY IN ACRE-FEET	IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)	MUNICIPAL	MINING	POWER	OTHER
	600.0							600.00000

The following Water Rights have been Segregated from 92-645:

(1) WRNUM: 97-2132	12.0	12.00000
APPL#: A30414dda NAME: School and Institutional Trust Lands Administration FILED: 09/08/1997 STATUS: APP APPR: 11/28/1997 marina; change a21514; 2.4 AF depletion		
(2) WRNUM: 97-2138	526.12	526.12000
APPL#: A30414ddb NAME: School and Institutional Trust Lands Administration FILED: 11/17/1997 STATUS: APP APPR: 05/04/1998 golf course & resort; change a21692; 505.224 AF depleted (See change.)		
(3) WRNUM: 97-2312	10.0	10.00000
APPL#: A30414ddc NAME: State of Utah Board of Water Resources, et al. FILED: 06/20/2007 STATUS: UNAP APPR:		

=====									
	CFS	ACRE- FEET	IRRIGATED ACREAGE	STOCK (ELUs)	DOMESTIC (FAMILIES)	MUNICIPAL	MINING	POWER	OTHER
92-645 currently has: -		51.88	ERROR						51.88000
All IRR-WR but NOT SE has been SEGREGATED OFF.									
All OTHER has been SEGREGATED OFF.									

*****E N D O F D A T A*****									



Online Services Agency List Business

Search

Utah Division of Water Rights



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(WARNING: Water Rights makes NO claims as to the accuracy of this data.) RUN DATE: 10/02/2013

WATER RIGHT: **92-622** APPLICATION/CLAIM NO.: **A30414da** CERT. NO.: CERTIFICAT
 CHANGES: [t21183](#) (Filed: 06/04/1997) Lapsed
[a21924](#) (Filed: 02/10/1998) Certificate (Issued: 02/24/2011)

OWNERSHIP*****

NAME: Eastside High Ditch Irrigation Company
 ADDR: c/o Tim Vetere, Agent
 P O Box 404
 Green River UT 84525

NAME: State of Utah Board of Water Resources
 ADDR: 1594 West North Temple, Ste 310
 Salt Lake City UT 84114-6201

DATES, ETC.*****

LAND OWNED BY APPLICANT? COUNTY TAX ID#:
 FILED: 11/18/1996|PRIORITY: 08/07/1958|PUB BEGAN: |PUB ENDED: |NEWSPAPER:
 ProtestEnd: |PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:09/19/1997|PROOF DUE: 07/31/2004
 EXTENSION: |ELEC/PROOF:[Proof] |ELEC/PROOF:07/13/2004|CERT/WUC: 02/24/2011|LAP, ETC: |LAPS LETTER:
 RUSH LETTR: |RENOVATE: |RECON REQ: |TYPE: []
 PD BOOK: [92-]|MAP: []|PUB DATE:

*TYPE -- DOCUMENT -- STATUS--

Type of Right: Application to Appropriate

Source of Info: Certificate

Status: Certificate

LOCATION OF WATER RIGHT**(Points of Diversion: Click on Location to access PLAT Program.)*****[MAP VIEWER](#)***[GOOGLE VIEW](#)*

FLOW: 3480.0 acre-feet
 SOURCE: Green River
 COUNTY: Grand COMMON DESCRIPTION: 6 miles N of Green River

POINT OF DIVERSION -- SURFACE:

(1) [S 671 ft W 21 ft from E4 cor, Sec 17, T 20S, R 16E, SLBM](#)

Diverting Works: Existing diversion dam, headgate, earthen canal Source: Green River

Stream Alt Required?: No

USES OF WATER RIGHT***** ELU -- Equivalent Livestock Unit (cow, horse, etc.) ***** EDU -- Equivalent Domestic Unit or 1 Family

SUPPLEMENTAL GROUP NO.: [616591](#).

IRRIGATION: 580.0 acres

PERIOD OF USE: 03/15 TO 10/31

###PLACE OF USE:	*-----NORTH WEST QUARTER-----*				*-----NORTH EAST QUARTER-----*				*-----SOUTH WEST QUARTER-----*				*-----SOUTH EAST QUARTER-----*			
	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE	* NW	NE	SW	SE
Sec 21 T 20S R 16E SLBM	*				*	X		X	*				*			X
Sec 22 T 20S R 16E SLBM	*X	X	X	X	*		X	X	*X	X	X	X	*X	X	X	X
Sec 23 T 20S R 16E SLBM	*				*				*X		X		*			
Sec 27 T 20S R 16E SLBM	*X	X			*				*				*			
Sec 28 T 20S R 16E SLBM	*				*	X			*				*			

GROU

SEGREGATION HISTORY*****

This Right was Segregated from [41-3479](#), with Appl#: A30414d, Approval Date: 10/06/1959 under which Proof is to be submitted.
 This Right as originally filed:

FLOW IN	QUANTITY IN	*-----W A T E R U S E S-----*						
CFS	ACRE-FEET	IRRIGATED	STOCK	DOMESTIC	MUNICIPAL	MINING	POWER	OTHER
		ACREAGE	(ELUs)	(FAMILIES)			ACRE-FEET	
	2900.0	580.0000						

APPLICATIONS FOR EXTENSIONS OF TIME WITHIN WHICH TO SUBMIT PROOF*****

FILED: 05/17/2001|PUB BEGAN: 05/31/2001|PUB ENDED: 05/09/2001|NEWSPAPER: The Times-Independent
 ProtestEnd:06/27/2001|PROTESTED: [No] |HEARNG HLD: |SE ACTION: [Approved]|ActionDate:08/08/2001|PROOF DUE: 07/31/2004

 *****END OF DATA*****

TECHNICAL MEMORANDUM

McMILLEN, LLC

To:	Bronson Smart (NRCS) Tony Beals (NRCS)	Project:	Green River Diversion Rehabilitation
From:	Greg Allington Aimee Hill	Cc:	Floyd Johnson (BLM) Dana Truman (BLM) File
Date:	March 6, 2014	Job No:	
Subject:	BLM Plant Survey		
Attachments:	Figure 1 – Vicinity Map		

1.0 INTRODUCTION

The Natural Resources Conservation Service (NRCS) is working with the Utah Department of Agriculture and Food (UDAF) as the project sponsor, through the Emergency Watershed Protection (EWP) Program, to rehabilitate the existing Green River Diversion (Diversion) to continue to provide water delivery to water rights holders.

Flooding in 2011 heightened concerns that a catastrophic failure of the diversion could result in significant losses to the local agricultural economy. The effects of recent flooding include cracking and chipping of concrete, undercutting of the downstream foundation sediments, and cracks associated with structural failure. This damage prompted the Green River Conservation District and, subsequently UDAF, to move forward with plans to rehabilitate the existing Green River Diversion Dam, also known as the Tusher Diversion Dam.

The Bureau of Land Management (BLM) is considered a Cooperating Agency on the project and therefore has been involved in the project since construction activities will occur on land managed by the BLM. McMillen, LLC (McMillen) and the NRCS met with Dana Truman of the BLM Price Field Office on February 6, 2014 to conduct a preliminary plant survey on the BLM-managed property west of the project site (Figure 1). Staging and access roads are proposed on the west side of the diversion for access during construction. This technical memorandum describes the results of initial coordination with BLM and the preliminary plant survey.

2.0 BLM SENSITIVE SPECIES

Species designated by BLM as sensitive species are native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

- There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a

distinct population segment of the species is at risk across all or a significant portion of the species range (BLM Manual 6840, Special Status Species Management), or

- The species depends upon ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (BLM Manual 6840, Special Status Species Management).

The following species are listed as sensitive by the BLM in Emery County (BLM 2011):

Table 1. BLM Sensitive Species, Emery County, Utah

Scientific Name	Common Name	Likely In Project Area
<i>Alicielia tenuis</i>	Mussentuchit gilia	No
<i>Astragalus pubentissimus</i>	Green River milk-vetch	Possible
<i>Camissonia bolanderi</i>	Bolander's camissonia	No
<i>Crytantha creutzfeldtii</i>	Creutzfeldt flower	No
<i>Erigeron maguire</i>	Maguire's daisy	No
<i>Eriogonum corymbosum</i>	Cronquist's buckwheat	No
<i>Euphorbia nephradenia</i>	Utah spurge	No
<i>Lygodesmia grandiflora</i>	Dolores rushpink	No
<i>Mentzelia multicaulis</i>	Horse Canyon stickleaf	No
<i>Oreoxis trotteri</i>	Trotter's alpineparsley	No
<i>Psorothamnus polydenius</i>	Jones indigo bush	Possible
<i>Sphaeralcea psoraloides</i>	Psoralea globemallow	No
<i>Talinum thompsonii</i>	Thompson's talinum	No

3.0 CONCLUSIONS AND RECOMMENDATIONS

The site visit with the BLM verified that the **Jones indigo-bush** is not in the project area likely due to 1) no observed presence of the species, 2) non-preferred soils, and 3) proximity to the Green River and associated flooding activity. In addition to the site visit, Dana Truman with BLM completed a site visit at a known population (outside the project study area) on February 6, 2014 that is located within a mile of the Tusher Dam. Plants were readily observed at this site and were in healthy condition. (Truman 2014)

After further BLM review, the **Green River milk-vetch** could occur on the Book Cliffs near the project area but not within the project area itself due to lack of suitable habitat. Therefore, the species will not be affected by project construction activities. (Truman 2014)

There are several other species that are included on the Emery County list of BLM sensitive species; however, the BLM site visit confirmed that none of the other species listed are expected to be found in the project area. (Truman 2014)

Upon completion of the BLM site visit, the BLM concluded that there is no concern for BLM sensitive plants within the project area. Dana Truman recommended that clearing

the mature cottonwood trees within the project area be avoided if at all possible. (Truman 2014)

4.0 REFERENCES

BLM. 2011. BLM Sensitive Plant Species List for Utah, February 2011.

Truman, Dana. 2014. Green River Diversion Rehabilitation. Email Correspondence between Dana Truman (BLM) and Aimee Hill (McMillen) regarding BLM Sensitive Plant Species. February 10, 2014.



**Waters of the U.S. and
Wetlands Delineation Report**

**Green River Diversion
Rehabilitation**

Final

McMILLEN, LLC

May 2014

SIGNATURE PAGE

We have appreciated the opportunity to work with NRCS on this project. If you have any questions or concerns regarding this report, please contact McMillen LLC at (208) 342-4214.

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TABLE OF CONTENTS

SECTION 1 INTRODUCTION	1
1.0 Introduction	1
1.1 Purpose	1
1.2 Project Location	1
1.3 Scope of Work.....	2
1.4 Regulations	2
1.5 Conditions at the Time of Delineation	2
SECTION 2 METHODS	3
2.0 Document Review	3
2.1 Wetland Delineation Methodology	3
2.1.1 Vegetation	3
2.1.2 Soils.....	4
2.1.3 Hydrology.....	5
2.2 Waters of the U.S. Delineation Methodology	6
2.3 Wetland and Waters of the U.S. Characterization.....	7
2.4 Field Methods.....	7
SECTION 3 RESULTS	9
3.0 Document Review	9
3.1 Field Investigation and Site Description	9
3.1.1 Precipitation and Stream Flow Data.....	10
3.1.2 Soil Survey Data.....	11
3.2 Wetlands.....	11
3.2.1 Wetland Characterization	12
3.2.1.1 Wetland A	12
3.2.1.2 Wetland B.....	12
3.2.1.3 Wetland C.....	13
3.2.2 Wetland Classification	13
3.3 Waters of the U.S.	14
3.3.1 Waters of the U.S. Characterization	14
3.3.1.1 Green River Segments 1 through 6	14
3.3.1.2 Tusher Wash.....	14
3.3.1.3 East Side Canal.....	14
3.3.2 Waters of the U.S. Classification	15
SECTION 4 CONCLUSION.....	16
4.0 Conclusion.....	16
SECTION 5 REFERENCES	17

LIST OF TABLES

Table 1-1. Legal Description.....	1
Table 2-1. Plant Indicator Status Categories	4
Table 3-1. NCDC 30-Year Monthly Normal Mean Precipitation at Green River, Utah.....	10
Table 3-3. Wetland Classification and Size.....	14
Table 3-4. Waters of the U.S. Classification and Size	15

APPENDICES

Appendix A	Wetland Data Sheets
Appendix B	Maps
Map 1	Vicinity Map

Map 2	NWI Map
Map 3	Soils Map
Map 4	Waters of the U.S. Delineation Map
Map 5	Green River OHWM Segments 1-6
Map 6	East Side Canal Downstream Survey Area
Map 7	Wetlands A, B, and C
Appendix C	Site Photographs

SECTION 1

INTRODUCTION

1.0 Introduction

McMillen, LLC (McMillen) was retained by the USDA Natural Resources Conservation Service (NRCS), along with the Utah Department of Ag and Food (UDAF) to complete wetland and non-wetland waters of the U.S. (herein referred to as “waters of the U.S.”) delineation services at Green River Diversion in Emery and Grand Counties, Utah (Map 1). The diversion is located on the Green River, and bordered by private land on the east/Grand County side and bordered by the Bureau of Land Management (BLM) on the west/Emery County side. This report describes in detail the three wetlands (Wetlands A, B, and C) and three waters of the U.S. (Green River, Tusher Wash, and the East Side Canal) identified during the delineation. The delineation presented in this report is a preliminary jurisdictional observation of wetlands and waters of the U.S. The United States Army Corps of Engineers (USACE) will provide the final jurisdictional determination for wetlands and waters of the U.S. located within the diversion rehabilitation area. The wetlands and waters of the U.S. described in this report were observed within the project footprint, which will herein be referred to as the “Survey Area”.

1.1 Purpose

This wetland and waters of the U.S. delineation report was completed to assist the NRCS and UDAF in identifying potential construction constraints related to jurisdictional water features that occur within the Survey Area.

1.2 Project Location

The Green River watershed is nested within the larger Colorado River watershed, which serves about 27 million people and irrigates nearly 4 million acres of land across several states of the western United States. Surface waters of the Green River originate across a 40,500 square-mile basin that includes parts of Wyoming, Utah, and Colorado (Appendix B-Map 1).

The Diversion is located on the Green River approximately 6 miles upstream of the town of Green River, Utah. The Diversion is adjacent to the Tusher Wash and is often referred to as the Tusher Diversion. The diversion structure spans the 750-foot width of the river and diverts water to water right holders on both sides of the river. Table 1-1 identifies the legal description of the Survey Area.

Table 1-1. Legal Description

Sections (Sec) / Township (T) / Range (R)	Coordinates (WGS84)	Parcels
Sec 17 / T 20 S / R 16 E	39.081186° lat -110.140417° long	Emery County 0501210005 Grand County 050160007, 050160003, 050160008, 050170005, 050170006, 050170008, 050200012, 050120001, 050200013

The area is identified as an Interior desert land resource region (LRR D) due to its long dry summer season and annual evapotranspiration exceeding precipitation (USACE 2008).

1.3 Scope of Work

The scope of work associated with this waters of the U.S. delineation includes the following elements:

1. Review background information pertaining to the Survey Area including relevant and readily available documents to evaluate the conditions;
2. Conduct a pedestrian survey within the proposed project boundary (Survey Area) and delineate wetland and waters of the U.S. features identified according to the appropriate wetland and waters of the U.S. delineation manuals; and
3. Prepare a draft and final report describing the methods used and the results of the delineation. This report includes a description of wetlands and streams delineated, the appropriate classification according to reviewing agencies, and a waters of the U.S. delineation map that depicts the locations of delineated aquatic features.

1.4 Regulations

The following regulations apply to work located within wetlands and waters of the U.S. in Utah:

- Federal
 - *USACE*: Under Section 10 and 404 of the Clean Water Act, a USACE permit is required for discharge of dredged or fill materials in wetlands and waters of the U.S.
 - *Environmental Protection Agency*: Under Section 402 of the Clean Water Act, a National Pollutant Discharge Elimination System (NPDES) Storm Water General Permit for Construction Activities is required for construction activities that disturb more than 1 acre and discharge pollutants to surface waters.
- State
 - *Utah Department of Environmental Quality*: Under Section 401 of the Clean Water Act, an approval will be required so that the project does not violate state water quality standards. Certification is obtained as part of the USACE Section 10 and 404 Permit review process.
 - *Utah Division of Water Rights*: A Stream Alteration Permit must be reviewed and approved by the UDWR.

1.5 Conditions at the Time of Delineation

This report is based on conditions that existed at the time the delineation was performed. If changes are made to the Survey Area after the date of this report, a wetland biologist should be consulted to review the investigation and recommendations so that written amendments or affirmation can be provided as appropriate.

SECTION 2

METHODS

2.0 Document Review

A review of available documents pertaining to the project was conducted prior to visiting Shem Dam. This review assisted with directing the focus of the waters of the U.S. delineation to potential critical aquatic features. The following documents were reviewed:

- Historical and current aerial photos,
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (USFWS 2013), (Appendix B-Map 3)
- NRCS Soil Survey of Emery and Grand Counties, Utah (NRCS 2013), (Appendix B-Map 4),
- United States Geological Survey (USGS) 1:24,000-scale 7.5-minute topographic map (USGS 1991),
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FEMA 1981),
- Other available general background information provided by NRCS.

2.1 Wetland Delineation Methodology

McMillen wetland biologists conducted an investigation in the Survey Area and performed formal waters of the U.S./ordinary high water mark (OHWM) wetland delineation on three features in the Survey Area. This formal delineation effort followed the guidance set forth in the following documents:

- 1987 United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory 1987),
- 2008 USACE Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE 2008a),
- 2010 Field Indicators of Hydric Soils in the United States (NRCS 2010), and
- 2007 Clean Water Act Jurisdiction – Rapanos vs. United States and Carabell vs. United States (Rapanos 2007).

The USACE wetland delineation manual and supplement listed above follow the three-parameter approach for making wetland determinations, such that positive indicators of wetlands must be present for each of the following parameters: 1) vegetation, 2) soils and 3) hydrology. Each of these three parameters is described in detail in the following sections.

2.1.1 Vegetation

The 2008 USACE manual defines hydrophytic vegetation as the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence on the plant species present. Hydrophytic plant species have the ability to grow, compete, and sustain in areas where anaerobic (oxygen-deprived) conditions exist due to the presence of surface or groundwater. In 1988, the USACE and USFWS developed plant indicator categories that describe the probability of vegetation occurring in wetlands (Reed 1988). This list was updated in 2014 (Lichvar et al. 2014), and each

plant observed within the Survey Area was categorized according to the Arid West Region indicator status. Table 2-1 below defines the indicator status categories.

Table 2-1. Plant Indicator Status Categories

Indicator Category	Indicator Symbol	Description
Obligate Wetland Plants	OBL	Plants that occur in wetlands, under natural conditions, greater than 99 percent of the time.
Facultative Wetland Plants	FACW	Plants that occur in wetlands, under natural conditions, between 67 to 99 percent of the time.
Facultative Plants	FAC	Plants that occur in wetlands, under natural conditions, between 34 to 66 percent of the time.
Facultative Upland Plants	FACU	Plants that occur in wetlands, under natural conditions, between 1 to 33 percent of the time.
Obligate Upland Plants	UPL	Plants that occur in wetlands, under natural conditions, less than 1 percent of the time.
No Indicator	NI	Indicator status has not been identified for the species.
No Occurrence	NO	No known occurrence of the plant in the region.

The prevalence of wetland vegetation is characterized by the dominant species comprising the plant community or communities. A dominant species is considered any plant species that is represented by 20 percent or greater total aerial coverage for each vegetative stratum (tree, shrub, herbaceous or aquatic bed). If more than 50 percent of the dominant plant species in a wetland is categorized as OBL, FACW, or FAC, then the plant community for the wetland can be classified as hydrophytic. Other indicators of hydrophytic vegetation include visual observations of plant species growing in areas of prolonged inundation and/or soil saturation, morphological adaptations, physiological adaptations, and reproductive adaptations.

Wetland vegetation communities within the Survey Area were classified according to the Cowardin classification system (Cowardin *et al.* 1979). Vegetation nomenclature described in this report follows the format outlined in the book entitled *Intermountain Flora* (Cronquist *et al.* 1972).

2.1.2 Soils

Hydric soils are soils that formed under conditions of saturation, flooding or ponding for a long enough period of time during the growing season that anaerobic conditions develop in the upper portion of the soil profile (USACE 2008a). These anaerobic conditions exhibit certain characteristics that can be identified in the field and that are associated with a wetland complex. Prolonged anaerobic soil conditions eventually lead to a chemically reduced state where soil components (iron, manganese, sulfur, and carbon compounds) develop soil colors and other physical characteristics that are indicative of hydric soils. These chemically-reduced soil components persist when the soil is either wet or dry. Specific hydric soil characteristics include:

- Reduced iron resulting in a soil color that is known as gley (bluish-gray or greenish-gray),
- Loss of iron resulting in a soil color that is known as redox depletion (gray or reddish-gray),

- Loss of iron resulting in concentrated soil patches known as redoximorphic concentrations (orange or red),
- Sulfidic odor, and/or
- High organic matter content (peat or muck) in the upper 32 inches of the soil profile.

Soil colors were determined using the Munsell® Soil-Color Charts (Munsell Color 2009) and their corresponding *hue* (spectral colors, e.g. 10YR), *value* (degree of lightness, e.g. 2/) and *chroma* (strength or purity of color, /1). Soil profiles must either have a dominant chroma of 2 or less, or the layer with a dominant chroma of more than 2 must be less than 6 inches thick to meet any hydric soil indicators. Hydric soil indicators commonly found in wetlands are identified in the technical document *Field Indicators of Hydric Soils in the United States* (NRCS 2010). These indicators help identify soils that were formed under saturated, flooded or ponded conditions long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.

Numerous undocumented soil pits were dug throughout the Survey Area to a depth of approximately 18 inches, or until refusal. The soil was analyzed visually and physically to determine its texture, and locate hydric indicators. Hydric soil conditions must be met within 12 inches of the ground surface in order for a soil to be considered hydric.

2.1.3 Hydrology

Hydrologic patterns in a wetland can be influenced by precipitation, stratigraphy, topography, soil permeability, plant cover and human disturbance. Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Wetland hydrology is sometimes difficult to determine during the summer months when precipitation has stopped, groundwater tables have dropped, stream flows have receded and springs or seeps have dried. Hydrologic indicators can be used during the wet spring months as well as the dry summer and fall months to identify primary and/or secondary indicators within the soil profile. Primary indicators include the following (USACE 2008a):

- | | |
|--|---|
| • Surface water or inundation | • High water table or saturated soil within 12 inches of the ground surface for 14 or more consecutive days at a minimum frequency of 5 years out of 10 |
| • Water marks | • Sparsely vegetated concave surface |
| • Algal mat or crust | • Water-stained leaves |
| • Surface soil cracks | • Oxidized rhizospheres along living roots |
| • Sediment and drift deposits | • Stunted or stressed plants |
| • Iron deposits | |
| • Salt crust | |
| • Inundation visible on aerial photography | |
| • Aquatic invertebrates | |
| • Hydrogen sulfide odor | |
| • Presence of reduced iron | |

Secondary indicators include (USACE 2008a):

- | | |
|--|--------------------------|
| • Drainage patterns | • Dry-season water table |
| • Saturation visible on aerial photography | • Geomorphic position |

- Shallow aquitard
- Raised ant mounds
- FAC-neutral test
- Frost-heave hummocks

The growing season for a region is dependent upon climate, precipitation and topography. The beginning and ending dates of the growing season are examined for an area to determine if wetland hydrology was present for the required time period. Wetland hydrology must be present for at least 14 consecutive days within 12 inches of the ground surface during the growing season in order for an area to be considered a wetland. Two indicators that the growing season has begun include: 1) a soil temperature that is at least 41 degrees Fahrenheit (°F), measured at least 12 inches below the ground surface, and/or 2) aboveground growth and development of vascular plants (USACE 2008a).

The growing season has begun on a site when two or more types of non-evergreen vascular plants exhibit one or more of the following indicators of biological activity:

- Emergence of herbaceous plants,
- New growth on vegetative crowns,
- Coleoptiles/cotyledon emergence from seed,
- Bud burst on woody plants,
- Emergence or elongation of woody plant leaves, and/or
- Emergence or opening of flowers.

The growing season has ended when woody deciduous species lose their leaves and/or the last herbaceous plants cease flowering and their leaves become dry or brown. Additional information may be collected from the WETS tables available from the USDA NRCS National Water and Climate Center (USDA 2002). These tables summarize the air temperature from National Weather Service meteorological stations throughout the United States for a specific area. The growing season dates in the WETS tables are an estimate of when air temperatures average above 28°F.

2.2 Waters of the U.S. Delineation Methodology

Streams, lakes and reservoirs were delineated according to their OHWM in accordance with the guidance set forth by the USACE in their delineation manual titled *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE 2008b). The OHWM is defined by the USACE as:

“Federal jurisdiction over a non-wetland WoUS extends to the OHWM, defined in 33 CFR Part 328.3 as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris. In the Arid West region of the United States, waters are variable and include ephemeral/intermittent and perennial channel forms.”

Physical characteristics that are present on the shoreline of a watercourse may vary depending on the type of water body and conditions of the area. There are no required physical indicators that must be present to make an OHWM determination. However, the following physical characteristics were considered when making the determination:

- Natural line impressed on the bank
- Shelving or topographic breaks

- Changes in the character of soil
- Presence of litter or debris (drift lines)
- Vegetation matted down, bent, or absent
- Leaf litter disturbed or washed away
- Deposition
- Bed and banks
- Change in plant community
- Destruction of terrestrial vegetation
- Wracking
- Sediment sorting
- Scour
- Multiple observed flow events
- Water staining

Other methods for determining the OHWM that do not include physical observation:

- Lake and stream gage data
- Spillway height
- Historic records of water flow
- Elevation data
- Flood predictions
- Statistical evidence

Combinations of physical characteristics and other methods should be used when available for determining the OHWM. As a result, many types of water bodies occur with varying conditions, including topography, channel morphology and flow dynamics. Other physical characteristics indicative of the OHWM may also be used that are not identified in the USACE guidance.

2.3 Wetland and Waters of the U.S. Characterization

The delineations conducted for this project were characterized according to their Cowardin (Cowardin *et al.* 1979) classification. The Cowardin classification system categorizes wetlands and deepwater habitats according to five separate systems: Marine, Estuarine, Riverine, Lacustrine, and Palustrine. These systems are then stratified into subsystems based on the plant community type. These systems are further stratified into classes and subclasses based on substrate material. Each class and subclass is then annotated with specific modifiers for water regimes, water chemistry, soil, and other special characteristics. The USFWS uses this classification system on their National Wetland Inventory (NWI) maps and it is used in this report to describe the general structure of the waters and wetlands.

The wetlands and streams identified in this project were also classified according to their hydrogeomorphic (HGM) characteristics in order to determine their location and function within the watershed. HGM classifications include the following:

- Depressional,
- Riverine,
- Lake-fringe,
- Slope,
- Flats, and
- Freshwater tidal.

2.4 Field Methods

The Survey Area was investigated for indicators of wetland parameters. If one of the three wetland parameters (hydrophytic vegetation, hydric soils or wetland hydrology indicators) was observed, then a more detailed examination of the area was performed. Upon discovery of all three wetland parameters adjacent to an upland area, the boundary line of the wetland was identified and followed until the delineation was complete. In general, the presence of hydrophytic vegetation and/or wetland hydrology indicators was the primary visual indicator used

to determine the boundaries of the wetland, with hydric soil indicators used secondarily to confirm the wetland boundary. If a point on the wetland boundary was not clearly identifiable by either hydrophytic vegetation or wetland hydrology indicators, then soil pits were dug in order to determine the wetland boundary line. Soil pits extended approximately 18 inches below ground surface and were left open for a minimum of five minutes during the examination. Not all of the soils pits dug during the wetland delineation were recorded. These unrecorded soil pits were used to compare the soil and wetland hydrology indicators of the recorded soil pits.

Paired sample plots were established at various locations along the wetland perimeter to aid in the wetland determination. These sample plots were given a label (ex. SPWA1). The sample plots consisted of examining the vegetation, soils and wetland hydrology indicators. The vegetation was assessed within an approximate 20-foot radius of the sample plot for trees, shrubs and herbaceous species. Soils were classified according to the Munsell® Soil-Color Chart and wetland hydrology indicators were examined for presence within 12 inches of the ground surface. Typically, one paired sample plot was established within the wetland unit for each vegetation community or hydrologic regime observed at the time of the delineation. The results of the sample plots were recorded and are located in Appendix A.

The site was also investigated for indicators of OHWM characteristics. If flowing water or a dry streambed was observed, additional investigations were performed upstream and downstream to locate the source of the water and/or the confluence with another stream. Specific physical characteristics of the streams were examined in order to facilitate locating the OHWM, which was delineated (e.g. OHWM 1).

A map of the wetland and waters of the U.S. delineation was prepared depicting the location of the sample plots. The wetland and OHWM points were recorded in the field at the time of the delineation using a TOPCON GRS-1 Global Positioning System (GPS) with antenna (± 1 -foot accuracy). The delineation was conducted on April 10, 2014. Delineation maps of the site are presented in Appendix B and Geographic Information System (GIS) shapefiles were also provided to NRCS of the wetland and OHWM delineation. A photographic record of the wetlands, waters of the U.S., sample plots and various other portions of the site are attached in Appendix C.

SECTION 3

RESULTS

3.0 Document Review

The following information was obtained during the document review prior to the waters of the U.S. delineation:

- Historical and current aerial photos,
 - The historical and current aerial photographs were examined to determine changes in land use and hydraulic patterns, vegetated areas and possible locations of standing water or saturated soils.
 - There have been minimal changes to the diversion area since the diversion was modified in the 1950s.
 - Changes to the diversion that have taken place recently were caused by natural flooding.
- USFWS NWI maps (USFWS 2013), (Appendix B-Map 3)
 - These data identify wetlands within, and in the vicinity of the Survey Area, as well as general types of plant community structures present. Wetlands identified in the Survey Area included:
 - Forested/Shrub Wetland
 - Riverine
- NRCS soil data (NRCS 2013a), (Appendix B-Map 4),
 - The soil data identifies the presence of soil types within, and in the vicinity of the Survey Area. Data from this source indicates the following dominant soil types:
 - Sandy Loams
- USGS 1:24,000 scale 7.5-minute topographic map (USGS 1991),
 - This map identifies the general topography and important site features within, and in the vicinity of the Survey Area.
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FEMA 1981),
 - This map identifies the extent of the FEMA mapped floodplains within the Survey Area
 - Portions of the Survey Area along the eastern bank (Grand County; Emery County is unmapped) of the Green River are located within the mapped floodplain.
- Other available general background information provided by NRCS.

3.1 Field Investigation and Site Description

The objective of the waters of the U.S. delineation was to determine the extent of jurisdictional waters and wetlands within the Survey Area based on the presence of hydrophytic vegetation, hydric soils and wetland hydrology indicators for wetlands and the presence of an OHWM along the river. The formal waters of the U.S. delineation was conducted on April 10, 2014 by McMillen biologists (Greg Allington and Aimee Hill). The weather was sunny during the delineation, with temperatures ranging from 50°F to 65°F.

The Survey Area was examined for signs of waters of the U.S. and wetland indicators. The results of the investigation revealed the presence of three wetlands (Wetland A, B and C), the

Green River, Tusher Wash, and East Side Canal. NWI maps are produced from the interpretation of aerial photographs that require field verification; therefore areas mapped as NWI wetlands (Appendix B-Map 2) were investigated for wetland indicators.

The wetland delineation consisted of determining the boundary between wetland and upland areas. The approximation of this boundary line typically consisted of identifying a topographic break and correlating the break with shifts in vegetation from hydrophytic to upland species. The dominant upland plant species within the shrub stratum were arid weedy invasive shrubs (*Elaeagnus angustifolia*, UPL). Some willows (*Salix exigua*, FACW) and few cottonwoods (*Populus spp.*, FACW) were also observed growing throughout the Survey Area primarily in sandy upland soils. The dominant hydrophytic species observed within the herbaceous stratum the dominant species was sedge species (*Carex spp.* OBL), rush (*Juncus spp.* FACW or OBL), red-tinge bulrush (*Scirpus microcarpus* OBL), spike-rush (*Eleocharis spp.* OBL). There were no dominant hydrophytic trees or shrubs identified growing in the wetland units themselves. Soil pits were then established to determine the presence or absence of hydric soils and wetland hydrology indicators (if not visible on the ground surface).

The following indicators of biological activity were observed throughout the entire site indicating that the delineation was performed at the beginning of the growing season: herbaceous plant persistence, and buds/green leaves on shrubs and willows. The wetland and waters of the U.S. delineations were conducted during the official growing season and soil temperatures were not taken for this delineation project based upon field observations that the growing season had begun.

3.1.1 Precipitation and Stream Flow Data

Monthly precipitation for the thirty-year period between 1981 and 2010 was obtained from Green River, Utah (at Green River Aviation Weather Station 423418) from the NOAA National Climatic Data Center (NCDC 2014) and is presented in Table 3-1.

Table 3-1. NCDC 30-Year Monthly Normal Mean Precipitation at Green River, Utah

Month	Green River, UT 1981-2010 (Inches)
January	0.49
February	0.59
March	0.71
April	0.59
May	0.56
June	0.38
July	0.80
August	0.78
September	0.84
October	0.98
November	0.45
December	0.43

3.1.2 Soil Survey Data

Soil information presented in this section has been summarized from NRCS Web Soil Survey data. Soils in the Study Area (Map 2) have been mostly derived from the Mancos Shale. In the Study Area portion of Grand County, two soil types are prevalent, including the Redbank-Flatnose families association, and the Toddler-Ravola-Glenton families association. Emery County soils in the area include Beebe loamy fine sand, Ferron-Green River-Rafael complex, Garley-Ravola-Huntsman complex, Hunting loam, strongly saline, Penner loam, and Vickel-Utaline-Persayo complex. The dominant soils within the Study Area are characteristic of river valleys and floodplains and occur at elevations comparable to the Diversion and surrounding area. These soils are briefly described in Table 1.

Table 3-2. NRCS Web Soil Survey Data

Name	Landform	Ecological Site	Slope (%)	Comment	Hydric Soil
Redbank-Flatnose Association	Flood plains	Greasewood and/or Coyote Willow	0 to 3	Comprised of nonsaline, porous fine sandy to gravelly loams. Occurs adjacent to the east bank of the river from 4,000 to 6,500 feet elevation. Hydric Rating = 5.	No
Toddler-Ravola-Glenton Families Association	Drainage ways, flood plains	Castle Valley Saltbush	0 to 3	Comprised of well-drained, nonsaline to slightly saline, silt loams and fine sandy loams. Hydric Rating = 0.	No
Ferron-Green River-Rafael Complex	Flood plains	Inland Saltgrass and Fremont Cottonwood	1 to 2	Comprised of poorly drained, nonsaline to moderately saline, very fine to fine sandy loams. Hydric Rating = 60.	Yes
Garley-Ravola-Huntsman Complex	Flood-plain Steps	Big Basin Sagebrush, Shadscale, and/or Black Greasewood	1 to 4	Comprised of well-drained, very slightly saline to moderately saline, clay, fine sandy, gravelly sandy clay, and gravelly fine sandy loams. Hydric Rating = 0.	No
Vickel-Utaline-Persayo Complex	Pediments	Shadscale, Indian Ricegrass, and/or Mat Saltbush	8 to 45	Comprised of well-drained, nonsaline to slightly saline, gravelly or clay loams that occur between 4,000 and 6,400 feet elevation. Hydric Rating = 0.	No

3.2 Wetlands

The wetland delineation identified one distinct wetland type within the Survey Area. The type identified were narrow ribbons of emergent wetland concentrated within approximately 2-4 feet of the water's edge along the Green River as is common in the Arid West. These potentially jurisdictional wetlands were classified according to the Cowardin system as presented in Table 3-3. A map of the identified wetlands on the site is provided in Appendix B-Map 4.

3.2.1 Wetland Characterization

Areas designated as emergent wetlands exhibited hydrophytic vegetation, sandy loam soils with hydric indicators, and are located within the river floodplain immediately adjacent to the river channel. These wetlands were typically within 4 feet of the water's edge, located along the east and west banks. Herbaceous stratum was relied upon to verify hydrophytic vegetation.

3.2.1.1 Wetland A

Wetland A is located downstream of the diversion on the west bank of the Green River. This emergent wetland exhibited some hydrophytic vegetation, with sandy loam soils. Herbaceous stratum was relied upon to verify hydrophytic vegetation.

Vegetation

Dominant vegetation within the wetland included horsetail (*Equisetum spp.* FACW), rush (*Juncus spp.* FACW or OBL), spike-rush (*Eleocharis palustris* OBL), and common reed (*Phragmites australis* FACW). Vegetation shifted to primarily Russian olive (*Elaeagnus angustifolia*), salt cedar (*Tamarix spp.*) and some willow (*Salix exigua*, FACW) along the edge of the topographic break which denoted the edge of the wetland. Even though willows were observed along the wetland edge, they were noted to be growing in upland soil with no hydrology indicators within 12 inches of the ground surface. Portions of the wetland to upland transition also consisted of bare ground.

Soils

Soils within the wetland boundary are sandy loams, exhibited low chroma (gley soils) and sulfidic odor. Soils in the upland consisted of sand throughout the profile.

Hydrology

Hydrology was present during the delineation in the form of standing water (~2 feet) in the center of the wetland and saturated soils within 12 inches of the ground surface on the edge of the wetland. The Green River experiences elevated flows during the spring and early summer which inundates this wetland unit. Once flows recede in the summer, this wetland retains standing water and also contains saturation within 12 inches of the surface throughout the rest of the year. The upland soil profile was dry and there were no secondary hydrology indicators in this upland area.

3.2.1.2 Wetland B

Wetland B is located upstream of the diversion on the west bank of the Green River. This emergent wetland exhibited some hydrophytic vegetation, with sandy loam soils. Herbaceous stratum was relied upon to verify hydrophytic vegetation.

Vegetation

Dominant vegetation within the wetland included sedge species (*Carex spp.* OBL), rush (*Juncus spp.* FACW or OBL), hardstem bulrush (*Schoenoplectus acutus* OBL), spike-rush (*Eleocharis spp.* OBL), and common reed (*Phragmites australis* FACW). Vegetation shifted to primarily Russian olive (*Elaeagnus angustifolia*), salt cedar (*Tamarix spp.*) and some willow (*Salix exigua*, FACW) along the edge of the topographic break which denoted the edge of the wetland. Even though willows were observed along the wetland edge, they were noted to be growing in upland soil with

no hydrology indicators within 12 inches of the ground surface. Portions of the wetland to upland transition also consisted of bare ground.

Soils

Soils within the wetland boundary are sandy loams, and exhibited low chroma (gley soils) and sulfidic odor. Soils in the upland consisted of sand throughout the profile.

Hydrology

Hydrology was present during the delineation in the form of standing water (~2 feet) in the center of the wetland and saturated soils within 12 inches of the ground surface on the edge of the wetland. The Green River experiences elevated flows during the spring and early summer which inundates this wetland unit. Once flows recede in the summer, this wetland retains standing water and also contains saturation within 12 inches of the surface throughout the rest of the year. The upland soil profile was dry and there were no secondary hydrology indicators in this upland area.

3.2.1.3 Wetland C

Wetland C is located upstream of the diversion on the east bank of the Green River. This emergent wetland exhibited some hydrophytic vegetation, with sandy loam soils. Herbaceous stratum was relied upon to verify hydrophytic vegetation.

Vegetation

Dominant vegetation within the wetland included sedge species (*Carex spp.* OBL), panicled bulrush (*Scirpus microcarpus* OBL), and spike-rush (*Eleocharis spp.* OBL). Vegetation shifted to primarily Russian olive (*Elaeagnus angustifolia*), and salt cedar (*Tamarix spp.*) along the edge of the topographic break which denoted the edge of the wetland. The wetland is inundated and has been disturbed by grazing. Even though willows were observed along the wetland edge, they were noted to be growing in upland soil with no hydrology indicators within 12 inches of the ground surface. Portions of the wetland to upland transition also consisted of bare ground.

Soils

Soils within the wetland boundary are sandy loams, and exhibited low chroma (gley soils) and sulfidic odor. Soils in the upland consisted of sand throughout the profile.

Hydrology

Hydrology was present during the delineation in the form of standing water (~2 feet) in the center of the wetland and saturated soils within 12 inches of the ground surface on the edge of the wetland. The Green River experiences elevated flows during the spring and early summer which inundates this wetland unit. Once flows recede in the summer, this wetland retains standing water and also contains saturation within 12 inches of the surface throughout the rest of the year. The upland soil profile was dry and there were no secondary hydrology indicators in this upland area.

3.2.2 Wetland Classification

Wetlands A, B, and C were classified according to the Cowardin system and their hydrogeomorphic classification, as presented in Table 3-3. A detailed map showing the location of each wetland unit is located in Appendix B (Map 7).

Table 3-3. Wetland Classification and Size

Wetland	Cowardin Classification				Hydrogeomorphic Classification	Size (Acres)
	System	Class	Subclass	Water Regime		
A	Palustrine (P)	Emergent (EM)	Persistent (1)	Seasonally Flooded (C)	Riverine	0.08
B	Palustrine (P)	Emergent (EM)	Persistent (1)	Seasonally Flooded (C)	Riverine	0.08
C	Palustrine (P)	Emergent (EM)	Persistent (1)	Seasonally Flooded (C)	Riverine	0.02
Total						0.18

3.3 Waters of the U.S.

A delineation of the OHWM was completed within the Survey Area to identify the limits of jurisdictional waterways. The OHWM is usually concurrent with the 2-year flood event and woody vegetation does not typically grow below this mark. There were three waters of the U.S. delineated within the Survey Area (Green River, Tusher Wash, and the East Side Canal). The Green River was assessed in six separate segments.

3.3.1 Waters of the U.S. Characterization

3.3.1.1 Green River Segments 1 through 6

The OHWM of the Green River was delineated on the west and east banks both upstream and downstream of the diversion for a total of 3,934 feet throughout six separate segments (Appendix B-Map 5). The delineation was performed when stream flows were below the OHWM by approximately one to two feet.

River flow upstream of the diversion is modified by the diversion but the water level stays constant as a result of diversion operations. Water behind the diversion is not drawn down, therefore all segments upstream and downstream of the diversion exhibited signs of a typical stream OHWM similar to an unregulated stream system. Hydrophytic herbaceous vegetation (*Scirpus microcarpus*, *Typha latifolia*, and *Carex spp.*, OBL) was observed growing along the edge of the river below the OHWM. This vegetation was considered part of the stream channel. A sharp transition to upland plant species (*Elaeagnus angustifolia*, *Tamarix spp.*, and *Kochia sp.*, UPL) was present along the OHWM.

3.3.1.2 Tusher Wash

The Tusher Wash is a 25-foot wide ephemeral wash that flows out of Tusher Canyon during extreme storm events. The wash in the Survey Area is dry and is typically used as an access road. In early April 2014 the wash was dry and a large amount of sediment had been deposited at the delta into the Green River (Appendix C). The OHWM was delineated for a total of 881 feet along its' north and south banks (Appendix B-Map 5).

3.3.1.3 East Side Canal

The East Side Canal is a 12-foot wide irrigation channel that diverts water from the Green River at the diversion during the irrigation season (April to October). The canal has vegetated banks in

historic aerial photos, however it was apparent during the April 2014 survey that some woody vegetation in the Survey Area had been removed, presumably as part of routine maintenance. The OHWM was delineated for a total of 761 feet along the east and west banks in the Survey Area (Appendix B-Maps 5 and 6).

Photographs of the Green River, Tusher Wash, and East Side Canal OHWM are shown in Appendix C. Typical signs of the OHWM were consistent both upstream and downstream of the diversion and included the following:

- Natural line impressed on the bank
- Shelving or topographic break
- Scouring
- Exposed roots
- Salt crust
- Absence of upland vegetation (woody shrubs)
- Debris deposits
- Water marks on large boulders, concrete structures, and vegetation

3.3.2 Waters of the U.S. Classification

Green River, Tusher Wash, and East Side Canal were classified according to the Cowardin classification system as presented in Table 3-4. A detailed map showing the locations of each water of the U.S. is located in Appendix B.

Table 3-4. Waters of the U.S. Classification and Size

Waters of the U.S.	Cowardin Classification				Length Delineated (Feet)
	System	Subsystem	Class	Subclass	
Green River Segment 1	Riverine (R)	Upper Perennial (3)	Unconsolidated Bottom (UB)	Cobble-Gravel (1)	582
Green River Segment 2	Riverine (R)	Upper Perennial (3)	Unconsolidated Bottom (UB)	Cobble-Gravel (1)	780
Green River Segment 3	Riverine (R)	Upper Perennial (3)	Unconsolidated Bottom (UB)	Cobble-Gravel (1)	550
Green River Segment 4	Riverine (R)	Upper Perennial (3)	Unconsolidated Bottom (UB)	Cobble-Gravel (1)	690
Green River Segment 5	Riverine (R)	Upper Perennial (3)	Unconsolidated Bottom (UB)	Cobble-Gravel (1)	872
Green River Segment 6	Riverine (R)	Upper Perennial (3)	Unconsolidated Bottom (UB)	Cobble-Gravel (1)	460
Tusher Wash	Riverine (R)	Intermittent	Unconsolidated Bottom (UB)	Temporarily Flooded	881
East Side Canal		Seasonal		Seasonally Flooded	761
Total					5,576

SECTION 4

CONCLUSION

4.0 Conclusion

McMillen performed a waters of the U.S. and wetland delineation on April 10, 2014 within the Survey Area for the Green River Diversion Rehabilitation project in Emery and Grand Counties, Utah. Six distinct features were delineated as potentially jurisdictional waters of the U.S. or wetlands during the survey.

The delineation was performed to help NRCS identify potential design and construction constraints related to critical aquatic features that occur within the Survey Area. The boundaries of these aquatic features are depicted in the attached maps. Within the Survey Area, the OHWM of the Green River was delineated along a total of 3,934 feet, the Tusher Wash OHWM along 881 feet, and the East Side Canal OHWM for 761 feet. A total of 0.18 acres of Palustrine Emergent wetlands were delineated within the Survey Area as well.

According to USACE regulations pertaining to waters of the U.S. delineation reports, this report is valid for five years from the date the delineation was performed.

SECTION 5

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APPENDIX A

WETLAND DATA SHEETS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: **Green River – Wetland A** City/County: **Emery County** Sampling Date: **4/10/14**
 Applicant/Owner: **UDAF** State: **UT** Sampling Point: **SPWA1**
 Investigator(s): **Greg Allington and Aimee Hill (McMillen, LLC)** Section, Township, Range: **Sec. 17 T20S R16E**
 Landform (hillslope, terrace, etc.): **Base of Terrace** Local relief (concave, convex, none): **Flat** Slope (%): **<5%**
 Subregion (LRR): **LRR D** Lat: **39.081186** Long: **-110.140417** Datum: **WGS84**
 Soil Map Unit Name: **042, Ferron-Green River-Rafael complex 1-3% slopes** NWI classification: **None**
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: Wetland is located downstream of the Green River Diversion.			

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																																
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)																																
2.																																				
3.																																				
4.																																				
	0%	= Total Cover																																		
<u>Sapling/Shrub Stratum</u> (Plot Size: 10 ft)				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th colspan="2" style="text-align: center;"><u>Total % Cover of:</u></th> <th colspan="2" style="text-align: center;"><u>Multiply by:</u></th> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">2</td> <td>x1 =</td> <td style="text-align: center;">2</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">0</td> <td>x2 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">0</td> <td>x3 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">0</td> <td>x4 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td>x5 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">2</td> <td style="text-align: center;">(A)</td> <td style="text-align: center;">2 (B)</td> </tr> <tr> <td colspan="4" style="text-align: center;">Prevalence Index = B/A = 1.0</td> </tr> </table> Yes Dominance Test is >50% Yes Prevalence Index is ≤3.0 ¹ No Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) No Wetland Non-Vascular Plants ¹ No Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	<u>Total % Cover of:</u>		<u>Multiply by:</u>		OBL species	2	x1 =	2	FACW species	0	x2 =	0	FAC species	0	x3 =	0	FACU species	0	x4 =	0	UPL species	0	x5 =	0	Column Totals:	2	(A)	2 (B)	Prevalence Index = B/A = 1.0			
<u>Total % Cover of:</u>		<u>Multiply by:</u>																																		
OBL species	2	x1 =	2																																	
FACW species	0	x2 =	0																																	
FAC species	0	x3 =	0																																	
FACU species	0	x4 =	0																																	
UPL species	0	x5 =	0																																	
Column Totals:	2	(A)	2 (B)																																	
Prevalence Index = B/A = 1.0																																				
1.																																				
2.																																				
3.																																				
4.																																				
5.																																				
	0%	= Total Cover																																		
<u>Herb Stratum</u> (Plot Size: 10 ft)																																				
1. Juncus spp	30%	Yes	FACW																																	
2. Eleocharis palustris	60%	Yes	OBL																																	
3. Equisetum spp.	<10%	No	FACW																																	
4.																																				
5.																																				
6.																																				
7.																																				
8.																																				
9.																																				
10.																																				
	90%	= Total Cover																																		
<u>Woody Vine Stratum</u> (Plot Size: 10 ft)																																				
1.																																				
2.																																				
	0%	= Total Cover																																		
% Bare Ground in Herb Stratum <5%																																				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																				
Remarks:																																				

SOILSampling Point: **SPWA1****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-8	2.5 Y 4/2	100%					Sandy	
8-18	GLE Y 1 3N	100%					Sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input checked="" type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input checked="" type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools |
| <input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type:

Depth (Inches):

Hydric Soils Present?**Yes**☒**No**☐

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input checked="" type="checkbox"/> Salt Crust (B11) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thick Muck Surface (C7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- | |
|---|
| <input checked="" type="checkbox"/> Water Marks (B1) (Riverine) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	0
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Depth (inches):	6-8
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Depth (inches):	0-6

Wetland Hydrology Present?**Yes**☒**No**☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: **Green River – Upland A** City/County: **Emery County** Sampling Date: **4/10/14**
 Applicant/Owner: **UDAF** State: **UT** Sampling Point: **SPUA2**
 Investigator(s): **Greg Allington and Aimee Hill (McMillen, LLC)** Section, Township, Range: **Sec. 17 T20S R16E**
 Landform (hillslope, terrace, etc.): **Base of Terrace** Local relief (concave, convex, none): **Flat** Slope (%): **<5%**
 Subregion (LRR): **LRR D** Lat: **39.081186** Long: **-110.140417** Subregion (LRR): **LRR D**
 Soil Map Unit Name: **042, Ferron-Green River-Rafael complex 1-3% slopes** NWI classification: **None**
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: 20 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)																					
1.																									
2.																									
3.																									
4.																									
0% = Total Cover																									
Sapling/Shrub Stratum (Plot Size: 20 ft)																									
5. <i>Elaeagnus angustifolia</i>	30	Yes	FAC	Prevalence Index worksheet: <table border="0"> <thead> <tr> <th></th> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>0</td> <td>x1 = 0</td> </tr> <tr> <td>FACW species</td> <td>1</td> <td>x2 = 2</td> </tr> <tr> <td>FAC species</td> <td>1</td> <td>x3 = 3</td> </tr> <tr> <td>FACU species</td> <td>1</td> <td>x4 = 4</td> </tr> <tr> <td>UPL species</td> <td>2</td> <td>x5 = 10</td> </tr> <tr> <td>Column Totals:</td> <td>3 (A)</td> <td>19 (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = 6.1		Total % Cover of:	Multiply by:	OBL species	0	x1 = 0	FACW species	1	x2 = 2	FAC species	1	x3 = 3	FACU species	1	x4 = 4	UPL species	2	x5 = 10	Column Totals:	3 (A)	19 (B)
	Total % Cover of:	Multiply by:																							
OBL species	0	x1 = 0																							
FACW species	1	x2 = 2																							
FAC species	1	x3 = 3																							
FACU species	1	x4 = 4																							
UPL species	2	x5 = 10																							
Column Totals:	3 (A)	19 (B)																							
6. <i>Tamarisk spp.</i>	30	YES	FACU																						
7. <i>Willow</i>	5	no	FACW																						
1. <i>Kochia</i>	5	no	UPL																						
2.																									
70% = Total Cover																									
Herb Stratum (Plot Size: 20 ft)																									
<i>Kochia</i>	5	no	UPL	No Dominance Test is >50% No Prevalence Index is ≤3.0 ¹ No Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) No Wetland Non-Vascular Plants ¹ No Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																					
1.																									
2.																									
3.																									
4.																									
5.																									
6.																									
7.																									
8.																									
9.																									
5% = Total Cover																									
Woody Vine Stratum (Plot Size: 20 ft)																									
1.				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																					
2.																									
75% = Total Cover																									
% Bare Ground in Herb Stratum 0%																									
Remarks:																									

SOILSampling Point: **SPUA2****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-18	2.5 Y 4/3	100					sandy	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type:

Depth (Inches):

Hydric Soils Present?

Yes

☐

No

☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thick Muck Surface (C7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- | |
|--|
| <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches):Water Table Present? Yes ☐ No ☒ Depth (inches):Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches):**Wetland Hydrology Present?**

Yes

☐

No

☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: **Green River – Wetland B** City/County: **Emery County** Sampling Date: **4/10/14**
 Applicant/Owner: **UDAF** State: **UT** Sampling Point: **SPWB3**
 Investigator(s): **Greg Allington and Aimee Hill (McMillen, LLC)** Section, Township, Range: **Sec. 17 T20S R16E**
 Landform (hillslope, terrace, etc.): **Base of Terrace** Local relief (concave, convex, none): **Flat** Slope (%): **<5%**
 Subregion (LRR): **LRR D** Lat: **39.081186** Long: **-110.140417** Subregion (LRR): **LRR D**
 Soil Map Unit Name: **042, Ferron-Green River-Rafael complex 1-3% slopes** NWI classification: **None**
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Wetland is located upstream of the Green River Diversion on the west bank of the Green River.			

VEGETATION – Use scientific names of plants

<u>Tree Stratum</u> (Plot Size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)																								
1.																												
2.																												
3.																												
4.																												
	0%	= Total Cover																										
<u>Sapling/Shrub Stratum</u> (Plot Size: 10 ft)																												
1.				Prevalence Index worksheet: <table border="0"> <tr> <td></td> <td><u>Total % Cover of:</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>2</td> <td>x1 = 2</td> </tr> <tr> <td>FACW species</td> <td>1</td> <td>x2 = 2</td> </tr> <tr> <td>FAC species</td> <td>0</td> <td>x3 = 0</td> </tr> <tr> <td>FACU species</td> <td>0</td> <td>x4 = 0</td> </tr> <tr> <td>UPL species</td> <td>0</td> <td>x5 = 0</td> </tr> <tr> <td>Column Totals:</td> <td>3 (A)</td> <td>4 (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = 1.33</td> </tr> </table>		<u>Total % Cover of:</u>	<u>Multiply by:</u>	OBL species	2	x1 = 2	FACW species	1	x2 = 2	FAC species	0	x3 = 0	FACU species	0	x4 = 0	UPL species	0	x5 = 0	Column Totals:	3 (A)	4 (B)	Prevalence Index = B/A = 1.33		
	<u>Total % Cover of:</u>	<u>Multiply by:</u>																										
OBL species	2	x1 = 2																										
FACW species	1	x2 = 2																										
FAC species	0	x3 = 0																										
FACU species	0	x4 = 0																										
UPL species	0	x5 = 0																										
Column Totals:	3 (A)	4 (B)																										
Prevalence Index = B/A = 1.33																												
2.																												
3.																												
4.																												
5.																												
	0%	= Total Cover																										
<u>Herb Stratum</u> (Plot Size: 10 ft)																												
1. Scirpus spp.	20	Yes	FACW																									
2. Eleocharis spp.	30	Yes	OBL																									
3. Schoenoplectus acutus	50	Yes	OBL																									
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												
	100%	= Total Cover																										
<u>Woody Vine Stratum</u> (Plot Size: 10 ft)																												
1.																												
2.																												
	0%	= Total Cover																										
% Bare Ground in Herb Stratum 0				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																								
Remarks:																												

SOILSampling Point: **SPWB3****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-12	2.5 Y 3/2	100%					Sandy	
12-16	GLEY 3/10Y	50%	gray				Sandy loam	Oxidized rhizospheres
12-16	2.5 Y 3/1	50%	Brown				Sandy loam	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools |
| <input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type:

Depth (Inches):

Hydric Soils Present?

Yes

☒

No

☐

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|---|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input checked="" type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thick Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches): 0Water Table Present? Yes ☒ No ☐ Depth (inches): 4Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0-4**Wetland Hydrology Present?**

Yes

☒

No

☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: **Green River – Upland B** City/County: **Emery County** Sampling Date: **4/10/14**
 Applicant/Owner: **UDAF** State: **UT** Sampling Point: **SPUB4**
 Investigator(s): **Greg Allington and Aimee Hill (McMillen, LLC)** Section, Township, Range: **Sec. 17 T20S R16E**
 Landform (hillslope, terrace, etc.): **Base of Terrace** Local relief (concave, convex, none): **Flat** Slope (%): **<5%**
 Subregion (LRR): **LRR D** Lat: **39.081186** Long: **-110.140417** Subregion (LRR): **LRR D**
 Soil Map Unit Name: **042, Ferron-Green River-Rafael complex 1-3% slopes** NWI classification: **None**
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: 20 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2.				Total Number of Dominant Species Across All Strata:	3 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	33% (A/B)
4.	0%	= Total Cover			
Sapling/Shrub Stratum (Plot Size: 20 ft)				Prevalence Index worksheet:	
1. <i>Eleagnus angustifolia</i>	30	Yes	FAC	Total % Cover of:	Multiply by:
2. <i>Tamarisk spp.</i>	40	YES	FACU	OBL species 0	x1 = 0
3. <i>Salix exigua</i>	5	no	FACW	FACW species 2	x2 = 4
4.				FAC species 1	x3 = 3
	75%	= Total Cover		FACU species 1	x4 = 4
Herb Stratum (Plot Size: 20 ft)				UPL species 0	x5 = 0
1. <i>Phragmites australis</i>	25	Yes	FACW	Column Totals: 4 (A)	11 (B)
2.				Prevalence Index = B/A = 2.75	
3.				:	
4.				No Dominance Test is >50%	
5.				No Prevalence Index is ≤3.0 ¹	
6.				No Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
7.				No Wetland Non-Vascular Plants ¹	
8.				No Problematic Hydrophytic Vegetation ¹ (Explain)	
9.				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
10.					
	25%	= Total Cover			
Woody Vine Stratum (Plot Size: 20 ft)					
1.					
2.					
	0%	= Total Cover			
% Bare Ground in Herb Stratum 0%				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks:

SOILSampling Point: **SPUB4****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-16	10 YR 4/3, 4/4	100					Sand	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type:

Depth (Inches):

Hydric Soils Present?

Yes

☐

No

☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thick Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches):Water Table Present? Yes ☐ No ☒ Depth (inches):Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches):**Wetland Hydrology Present?**

Yes

☐

No

☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: **Green River – Wetland C** City/County: **Grand County** Sampling Date: **4/10/14**
 Applicant/Owner: **UDAF** State: **UT** Sampling Point: **SPWC5**
 Investigator(s): **Greg Allington and Aimee Hill (McMillen, LLC)** Section, Township, Range: **Sec. 17 T20S R16E**
 Landform (hillslope, terrace, etc.): **Base of Terrace** Local relief (concave, convex, none): **Flat** Slope (%): **<5%**
 Subregion (LRR): **LRR D** Lat: **39.081186** Long: **-110.140417** Subregion (LRR): **LRR D**
 Soil Map Unit Name: **047, Redbank-Flatnose Families association** NWI classification: **None**
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampling Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: Wetland has been grazed.			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A) Total Number of Dominant Species Across All Strata: 3 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)																																
1.																																				
2.																																				
3.																																				
4.																																				
	0%	= Total Cover																																		
Sapling/Shrub Stratum (Plot Size: 10 ft)																																				
1.				Prevalence Index worksheet: <table border="0"> <tr> <td colspan="2"><u>Total % Cover of:</u></td> <td colspan="2"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>3</td> <td>x1 =</td> <td>3</td> </tr> <tr> <td>FACW species</td> <td>0</td> <td>x2 =</td> <td>0</td> </tr> <tr> <td>FAC species</td> <td>0</td> <td>x3 =</td> <td>0</td> </tr> <tr> <td>FACU species</td> <td>0</td> <td>x4 =</td> <td>0</td> </tr> <tr> <td>UPL species</td> <td>0</td> <td>x5 =</td> <td>0</td> </tr> <tr> <td>Column Totals:</td> <td>3</td> <td>(A)</td> <td>3 (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = 1.0</td> </tr> </table>	<u>Total % Cover of:</u>		<u>Multiply by:</u>		OBL species	3	x1 =	3	FACW species	0	x2 =	0	FAC species	0	x3 =	0	FACU species	0	x4 =	0	UPL species	0	x5 =	0	Column Totals:	3	(A)	3 (B)	Prevalence Index = B/A = 1.0			
<u>Total % Cover of:</u>		<u>Multiply by:</u>																																		
OBL species	3	x1 =	3																																	
FACW species	0	x2 =	0																																	
FAC species	0	x3 =	0																																	
FACU species	0	x4 =	0																																	
UPL species	0	x5 =	0																																	
Column Totals:	3	(A)	3 (B)																																	
Prevalence Index = B/A = 1.0																																				
2.																																				
3.																																				
4.																																				
5.																																				
	0%	= Total Cover																																		
Herb Stratum (Plot Size: 10 ft)																																				
1. <i>Scirpus microcarpus</i>	30	Yes	OBL																																	
2. <i>Eleocharis spp.</i>	10	Yes	OBL																																	
3. <i>Carex spp.</i>	10	Yes	OBL																																	
4.																																				
5.																																				
6.																																				
7.																																				
8.																																				
9.																																				
10.																																				
	50%	= Total Cover																																		
Woody Vine Stratum (Plot Size: 10 ft)																																				
1.				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																
2.																																				
	0%	= Total Cover																																		
% Bare Ground in Herb Stratum 50%																																				
Remarks: Wetland heavily disturbed by grazing.																																				

SOILSampling Point: **SPWC5****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-12	7.5 YR 3/1	100					Sand	Some mottling
12-16	Gley 1 2.5 N	100					Sandy loam	Gleyed and gray soil

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools |
| <input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type:

Depth (Inches):

Hydric Soils Present?**Yes**☒**No**☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thick Muck Surface (C7) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- | |
|--|
| <input checked="" type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Depth (inches): 0-16

Wetland Hydrology Present?**Yes**☒**No**☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **Muddy at surface, no inundation**

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: **Green River – Upland C** City/County: **Grand County** Sampling Date: **4/10/14**
 Applicant/Owner: **UDAF** State: **UT** Sampling Point: **SPUC6**
 Investigator(s): **Greg Allington and Aimee Hill (McMillen, LLC)** Section, Township, Range: **Sec. 17 T20S R16E**
 Landform (hillslope, terrace, etc.): **Base of Terrace** Local relief (concave, convex, none): **Flat** Slope (%): **<5%**
 Subregion (LRR): **LRR D** Lat: **39.081186** Long: **-110.140417** Subregion (LRR): **LRR D**
 Soil Map Unit Name: **047, Redbank Flatnose Families Association** NWI classification: **PSS**
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks:			

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																																
1.				Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 1 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)																																
2.																																				
3.																																				
4.																																				
	0%	= Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <thead> <tr> <th colspan="2">Total % Cover of:</th> <th colspan="2">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td style="text-align: center;">0</td> <td>x1 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">0</td> <td>x2 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">2</td> <td>x3 =</td> <td style="text-align: center;">6</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">1</td> <td>x4 =</td> <td style="text-align: center;">4</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td>x5 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">3</td> <td>(A)</td> <td style="text-align: center;">10 (B)</td> </tr> <tr> <td colspan="4" style="text-align: center;">Prevalence Index = B/A = 3.3</td> </tr> </tbody> </table>	Total % Cover of:		Multiply by:		OBL species	0	x1 =	0	FACW species	0	x2 =	0	FAC species	2	x3 =	6	FACU species	1	x4 =	4	UPL species	0	x5 =	0	Column Totals:	3	(A)	10 (B)	Prevalence Index = B/A = 3.3			
Total % Cover of:		Multiply by:																																		
OBL species	0	x1 =	0																																	
FACW species	0	x2 =	0																																	
FAC species	2	x3 =	6																																	
FACU species	1	x4 =	4																																	
UPL species	0	x5 =	0																																	
Column Totals:	3	(A)	10 (B)																																	
Prevalence Index = B/A = 3.3																																				
Sapling/Shrub Stratum (Plot Size: 10 ft)																																				
1. <i>Eleagnus angustifolia</i>	50	Yes	FACU																																	
2. <i>Tamarisk</i>	40	Yes	FACU																																	
3. <i>Salix exigua</i>	10	No	FACW																																	
4.																																				
5.																																				
	100%	= Total Cover																																		
Herb Stratum (Plot Size: 10 ft)																																				
1.																																				
2.																																				
3.																																				
4.																																				
5.																																				
6.																																				
7.																																				
8.																																				
9.																																				
10.																																				
	100%	= Total Cover																																		
Woody Vine Stratum (Plot Size: 10 ft)																																				
1.																																				
2.																																				
	0%	= Total Cover																																		
% Bare Ground in Herb Stratum 0%																																				
Remarks:																																				

SOILSampling Point: **SPUC6****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (Moist)	%	Type ¹	Loc ²		
0-18	10 YR 4/3	100					Sand	

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type:

Depth (Inches):

Hydric Soils Present?

Yes

☐

No

☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input checked="" type="checkbox"/> Thick Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:Surface Water Present? Yes ☐ No ☒ Depth (inches):Water Table Present? Yes ☐ No ☒ Depth (inches):Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches):**Wetland Hydrology Present?**

Yes

☐

No

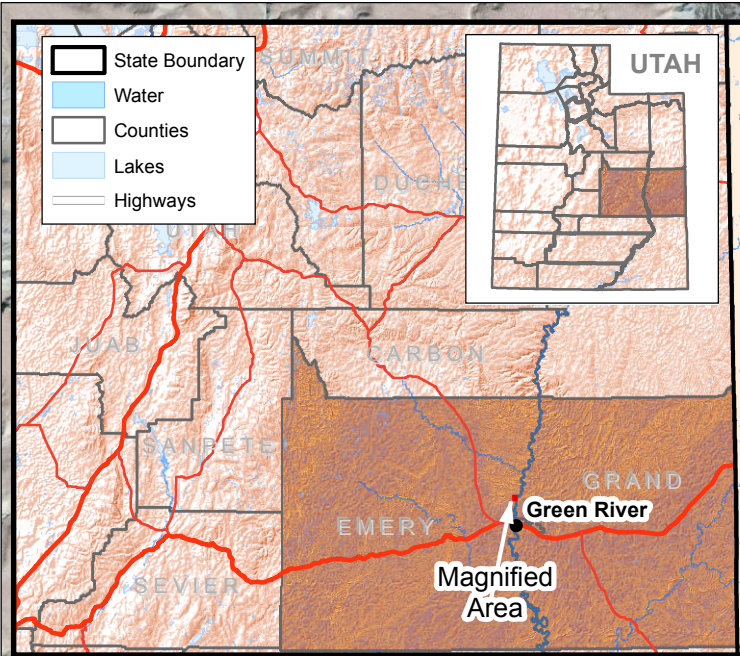
☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX B

MAPS



Map 1: Vicinity Map

NRCS Green River Diversion Rehabilitation
Wetland Delineation Report

0 500 1,000 2,000 Feet



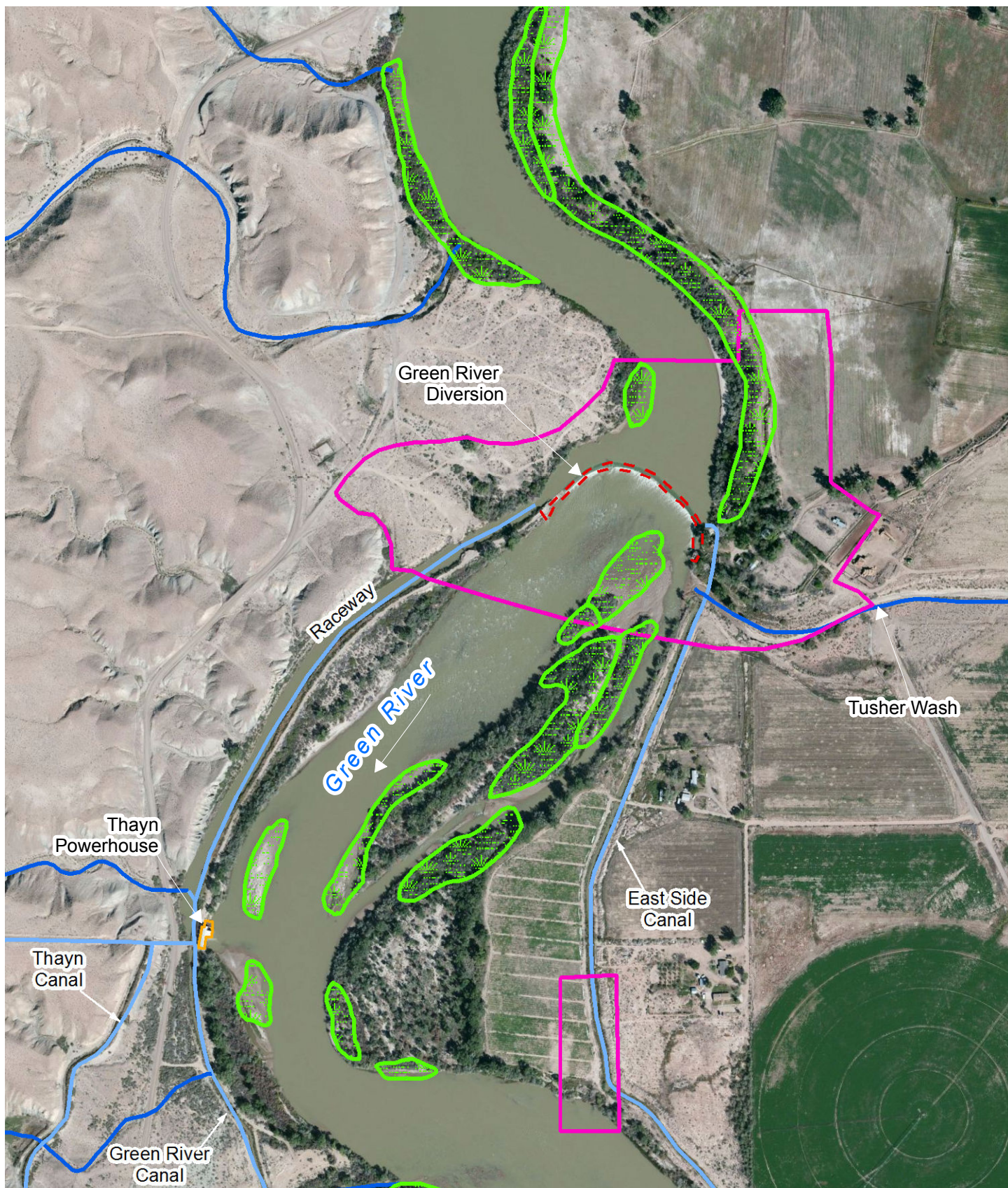
McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity



Legend

- Survey Area
- Roads
- Green River Diversion Dam

NOTES:
Aerial photo from Bing
imagery service. Capture
date September 2010,
Shaded reliefs derived from
10-m and 90-m USGS
DEMs. Points, lines and
polygons supplied by various
state and federal sources,



Map 2: National Wetland Inventory Map

NRCS Green River Diversion Rehabilitation
Wetland Delineation Report

0 300 600 1,200 Feet

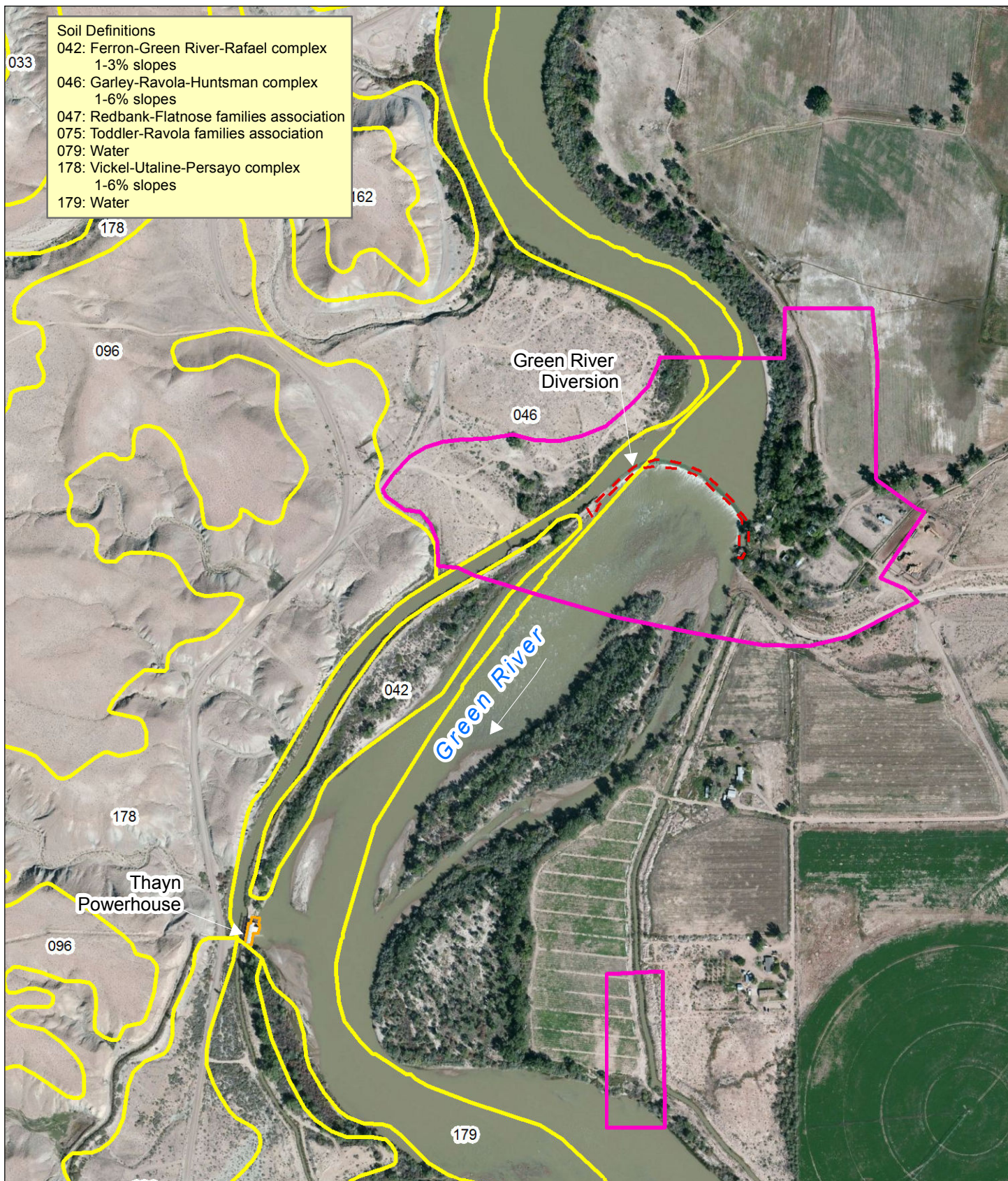
McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity

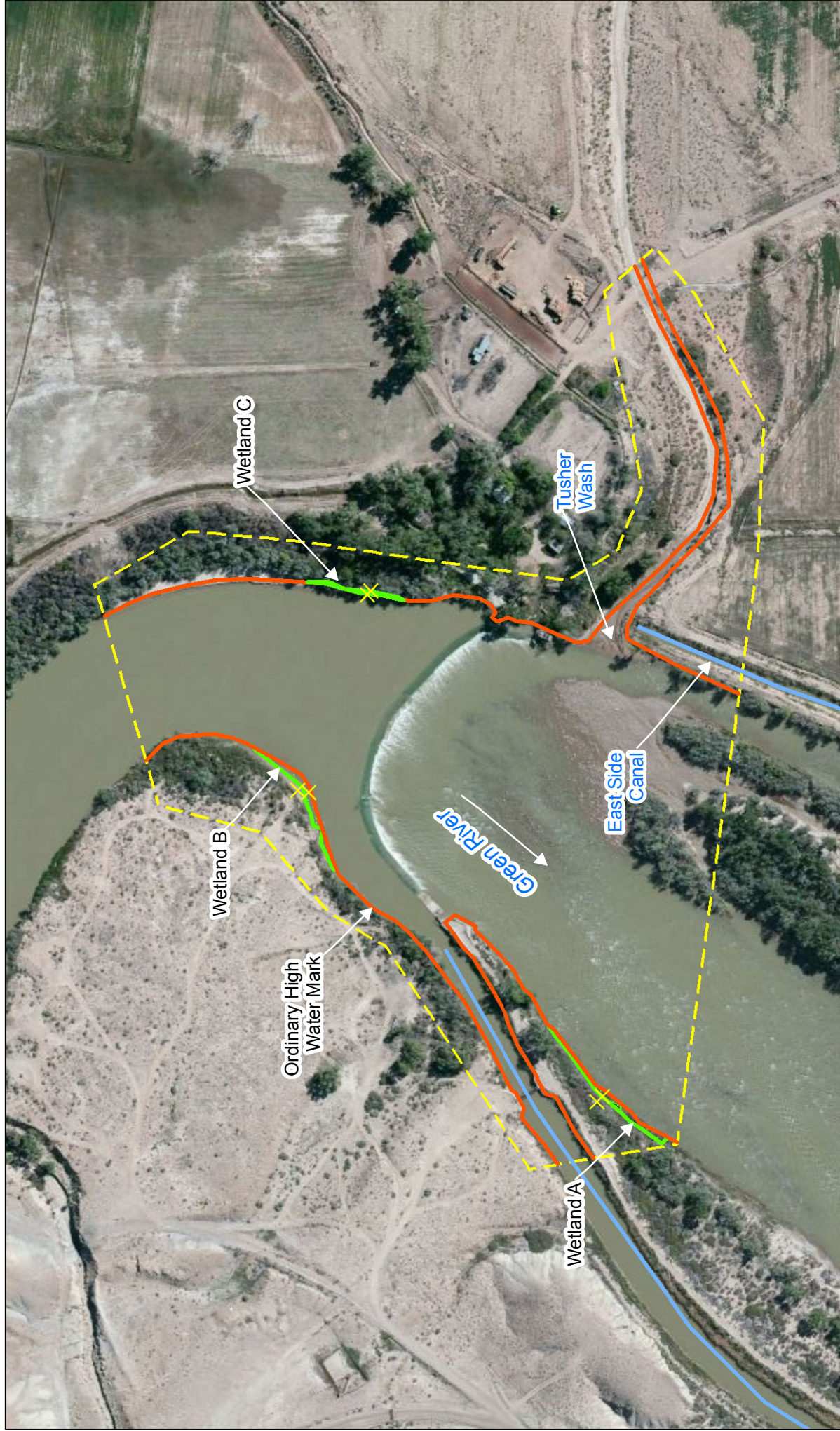


Legend

- NWI Wetland
- Survey Area
- Stream
- Canal

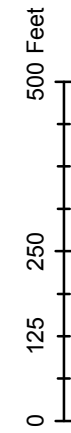
NOTES:
Aerial photo from Bing imagery service. Capture date September 2010. Wetland data from USFWS national wetland inventory.



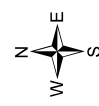


Map 4: Waters of the US and Wetlands Delineation Map

NRCS Green River Diversion Rehabilitation
Wetland Delineation Report



McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

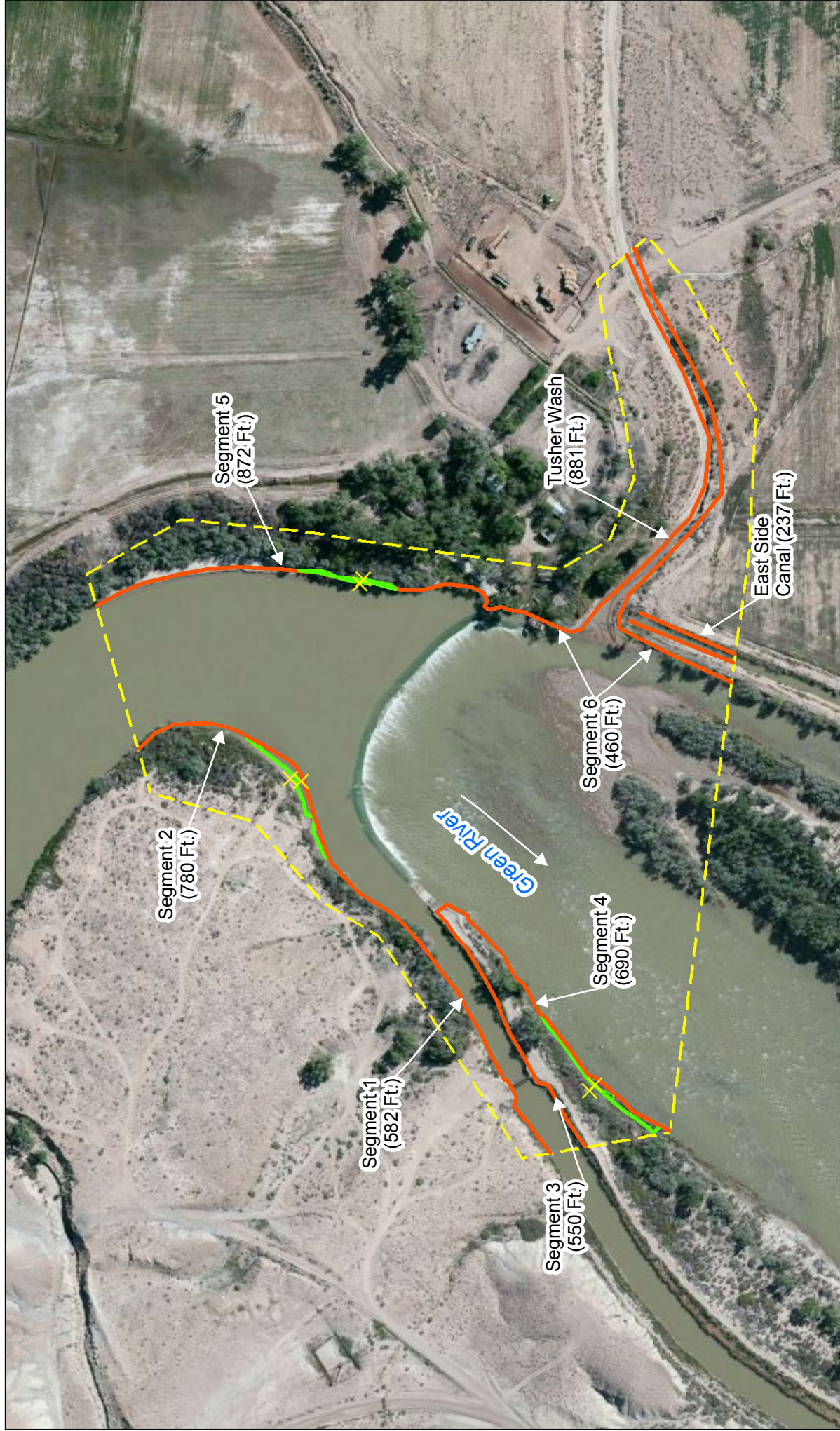


Legend

- Survey Area
- Ordinary High Water Mark
- Wetland
- X Sample Point (SP)
- Canal

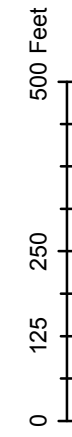
NOTES:

Aerial photo from Bing imagery service. Capture date September 2010. Delineation features are drawn based on field survey data collected by McMillen, LLC.

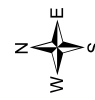


Map 5: Green River OHWM Segments 1-6 Map

NRCS Green River Diversion Rehabilitation
Wetland Delineation Report



McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

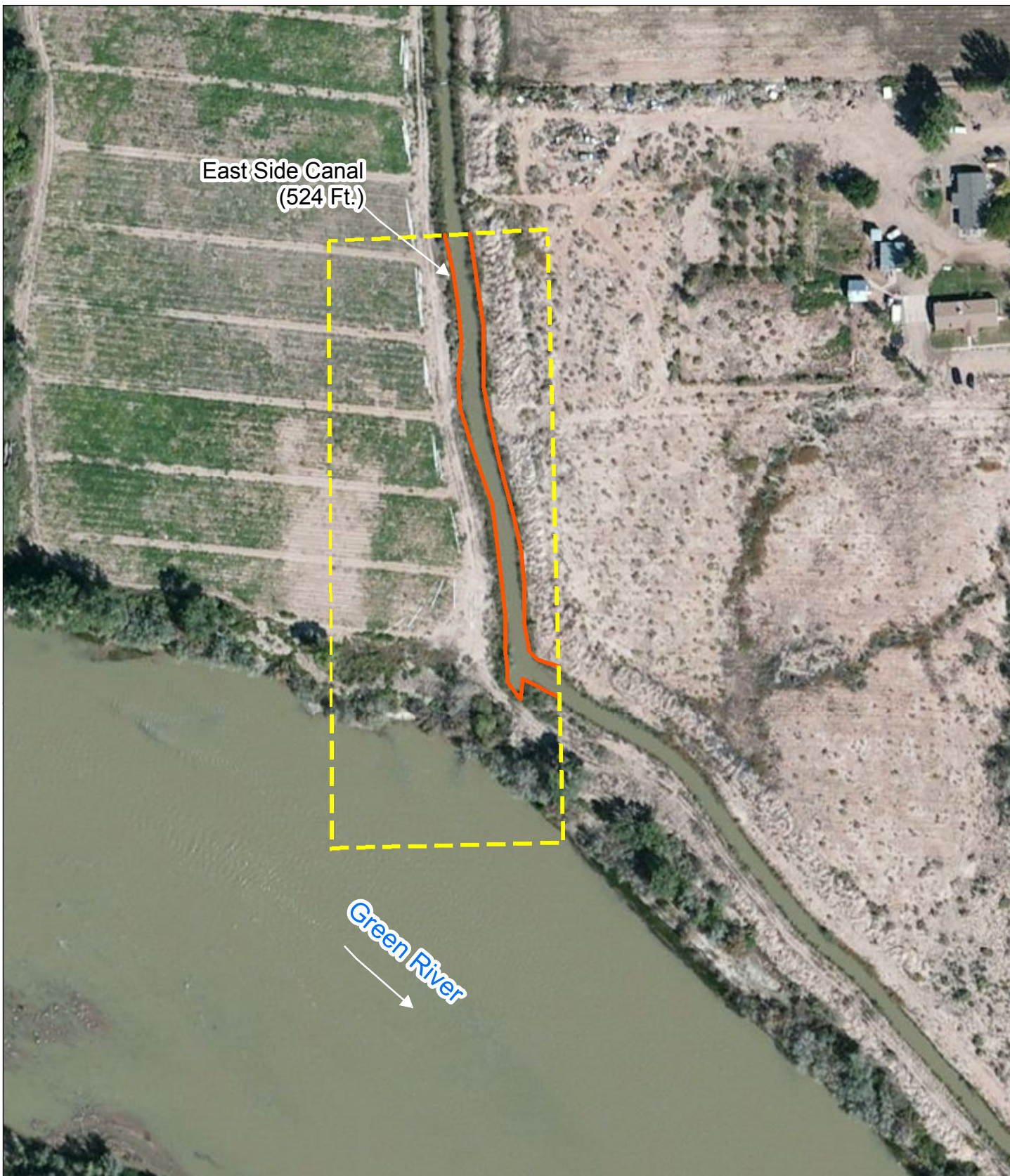


Legend

- Survey Area
- Ordinary High Water Mark
- Wetland
- X Sample Point (SP)

NOTES:

Aerial photo from Bing imagery service. Capture date September 2010. Delineation features are drawn based on field survey data collected by McMillen, LLC.



Map 6: East Side Canal Downstream Survey Area

NRCS Green River Diversion Rehabilitation
Wetland Delineation Report



0 75 150 300 Feet

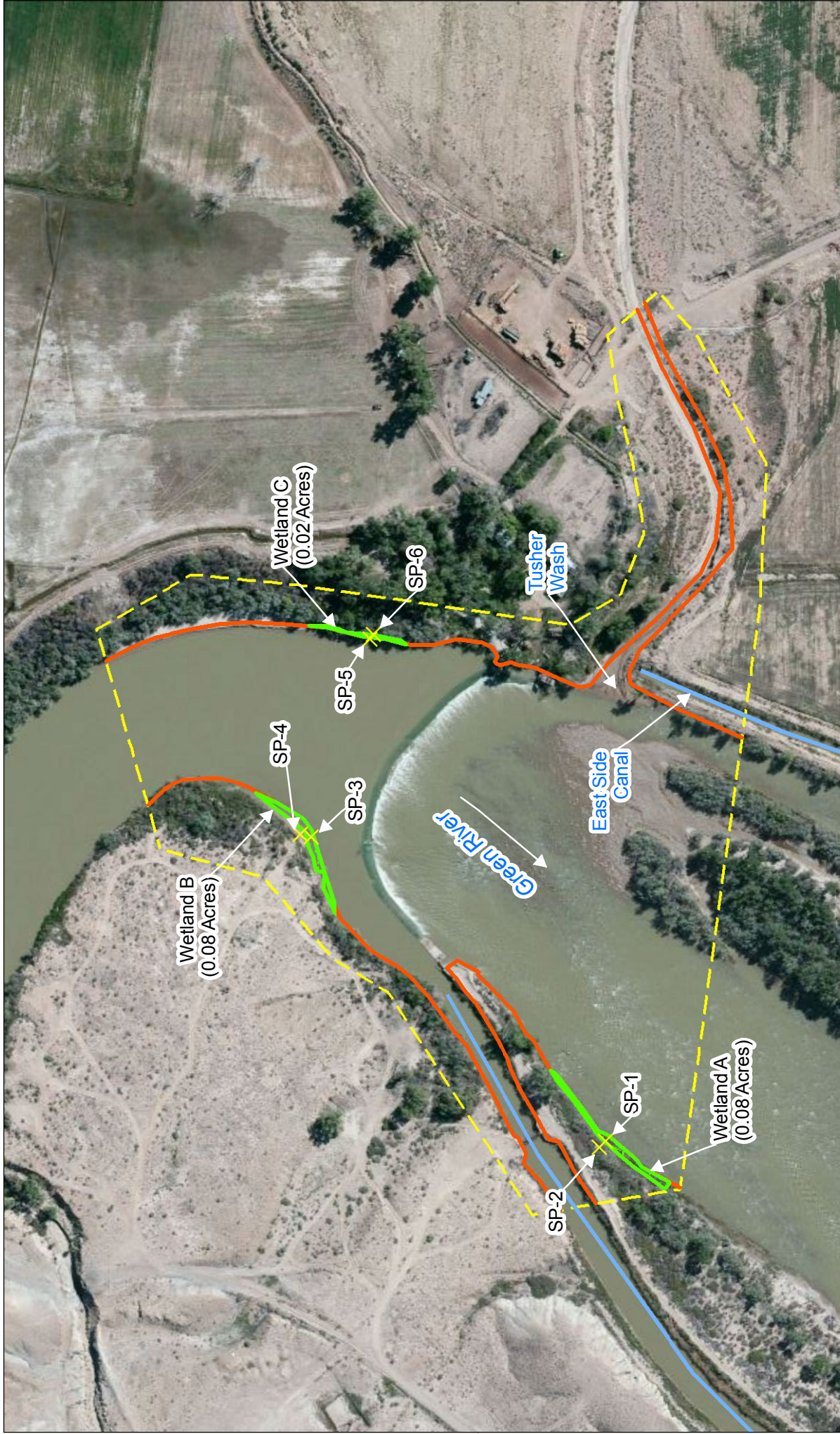


Legend

- Survey Area
- Ordinary High Water Mark

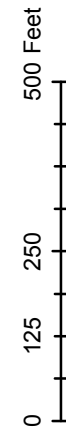
NOTES:
Aerial photo from Bing
imagery service. Capture
date September 2010.

McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

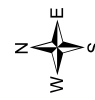


Map 7: Wetlands A, B and C Map

NRCS Green River Diversion Rehabilitation
Wetland Delineation Report



McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.



Legend

- Survey Area
- Ordinary High Water Mark
- Wetland
- X Sample Point (SP)
- Canal

NOTES:

Aerial photo from Bing imagery service. Capture date September 2010. Delineation features are drawn based on field survey data collected by McMillen, LLC.

APPENDIX C

SITE PHOTOGRAPHS

Wetland A



Photograph 1 (4/10/2014) – Wetland A Looking South Along The West Bank



Photograph 2 (4/10/2014) – Wetland A Looking North Toward The Diversion



Photograph 3 (4/10/2014) – Wetland A Soil Pit 1 (SPWA1) [WETLAND]



Photograph 4 (4/10/2014) – Wetland A (SPWA1) Vegetation [WETLAND]

Wetland B



Photograph 5 (4/10/2014) – Wetland B Looking South; SPWB3 Vegetation [WETLAND]



Photograph 6 (4/10/2014) – Wetland B Looking North



Photograph 7 (4/10/2014) – Wetland B SPWB3 Soil Pit [WETLAND]



Photograph 8 (4/10/2014) – Wetland B SPUB4 Soil Pit [UPLAND]

Wetland C



Photograph 9 (4/10/2014) – Wetland C Looking South



Photograph 10 (4/10/2014) – Wetland C Looking North



Photograph 11 (4/10/2014) – Wetland C SPWC5 Soil Pit [WETLAND]

Green River Segment 1



Photograph 12 (4/10/2014) – OHWM at West Raceway Looking Downstream



Photograph 13 (4/10/2014) – OHWM Looking Downstream

Green River Segment 2



Photograph 14 (4/10/2014) – OHWM Looking Downstream



Photograph 15 (4/10/2014) – OHWM Looking Upstream Toward the Diversion

Green River Segment 3



Photograph 16 (4/10/2014) – OHWM Looking Upstream



Photograph 17 (4/10/2014) – OHWM Looking Downstream

Green River Segment 4



Photograph 18 (4/10/2014) – OHWM Looking Downstream



Photograph 19 (4/10/2014) – OHWM Looking Upstream

Green River Segment 5



Photograph 20 (4/10/2014) –OHWM, Green River Side Channel at Tusher Wash



Photograph 21 (4/10/2014) – OHWM, Green River Diversion, Looking Upstream Along the East Bank From Tusher Wash

Green River Segment 6



Photograph 22 (4/10/2014) – OHWM Looking Downstream



Photograph 23 (4/10/2014) – OHWM Looking Upstream

Tusher Wash



Photograph 24 (4/10/2014) – OHWM Looking Upstream



Photograph 25 (4/10/2014) – OHWM Looking Downstream Toward the Green River

East Side Canal



Photograph 26 (4/10/2014) – OHWM Looking Downstream, Typical of Vegetation Along the Canal



Photograph 27 (4/10/2014) – OHWM Looking Upstream Parallel to the Green River



**Green River Diversion
Rehabilitation**

**ESA Section 7
Biological Assessment**

Final

Prepared For: USDA-NRCS Utah

Prepared By: Greg J. Allington

McMILLEN, LLC

June 13, 2014

TABLE OF CONTENTS

SECTION 1	BACKGROUND / HISTORY.....	1
1.1	Introduction.....	1
1.1.1	Project Responsibilities.....	2
1.2	Project History	2
1.3	Federal Consultation to Date	3
SECTION 2	PROJECT ACTION AND ACTION AREA	5
2.1	Project Action Description.....	5
2.1.1	Proposed Flow Allocations	6
2.2	Action Area.....	7
2.3	Conservation Measures	8
2.3.1	Fish Species	8
2.3.2	Migratory Birds.....	9
2.3.3	General Conservation Measures	10
2.3.4	Construction Schedule, Sequencing and Work Windows	11
2.4	Mitigation.....	12
2.5	Impacts Summary	12
SECTION 3	SPECIES AND CRITICAL HABITAT STATUS	13
3.1	Species List.....	13
3.2	No Effect Determination.....	14
3.3	Species Descriptions	16
3.3.1	Mexican Spotted Owl	16
3.3.2	Yellow-Billed Cuckoo	16
3.3.3	Southwestern Willow Flycatcher.....	17
3.3.4	Bonytail Chub	17
3.3.5	Colorado Pikeminnow	18
3.3.6	Humpback Chub	18
3.3.7	Razorback Sucker	19
3.4	Designated Critical Habitat.....	19
SECTION 4	EFFECTS OF THE ACTION.....	20
4.1	Mexican Spotted Owl	20
4.1.1	Direct Impacts.....	20
4.1.2	Indirect Impacts	20

4.2	Yellow-Billed Cuckoo and Southwestern Willow Flycatcher	20
4.2.1	Direct Impacts	21
4.2.2	Indirect Impacts	21
4.3	Colorado Pikeminnow, Razorback Sucker, Bonytail Chub, and Humpback Chub	21
4.3.1	Direct Impacts	22
4.3.2	Indirect Impacts	23
4.4	Interdependent and Interrelated Action Effects	23
4.5	Effects from Ongoing Project Activities	23
4.6	Cumulative Effects	23
4.6.1	Past, Present, and Reasonably Foreseeable Future Actions	24
4.6.2	Mexican Spotted Owl	24
4.6.3	Yellow-Billed Cuckoo and Southwestern Willow Flycatcher	25
4.6.4	Colorado Pikeminnow, Razorback Sucker, Bonytail Chub, and Humpback Chub	25
SECTION 5	CONCLUSION.....	26
5.1	Determination of Effect	26
5.2	Conclusion	26
SECTION 6	REFERENCES	27

LIST OF TABLES

Table 1-1.	USFWS Listed Species and Effect Determination.....	1
Table 2-1.	Proposed Flow Allocations	7
Table 2-2.	Impacts Summary to Critical Habitat.....	12
Table 3-1.	USFWS Listed Species	13

MAPS

Map 1:	Vicinity Map
Map 2:	Project Area Map
Map 3:	Proposed Project Action
Map 4:	Staging and Access
Map 5:	Action Area
Map 6:	Impacts to Endangered and Threatened Fish Species and Critical Habitat

APPENDICES

Appendix A	Species Lists
Appendix B	Photographs
Appendix C	Supporting Documentation

SECTION 1

BACKGROUND / HISTORY

1.1 Introduction

McMillen, LLC (McMillen) was retained by the United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) to complete a Biological Assessment (BA) for the Green River Diversion Rehabilitation Project in Emery and Grand Counties, Utah (Map 1). This BA has been prepared in compliance with Section 7 of the Endangered Species Act (ESA) (16. U.S.C. 1536 (c)) to address potential project-related impacts on United States Fish and Wildlife Service (USFWS) listed fish, wildlife, and plant species designated as threatened, endangered, proposed, or candidate species and their associated critical habitat. This document also follows the standards established in the USDA-NRCS National Environmental Policy Act Handbook.

A review of ESA listed species was conducted for Emery and Grand Counties which included accessing the USFWS Environmental Conservation Online System (March 25, 2014) and obtaining an ESA species list for Emery and Grand Counties. Additionally the USFWS Information, Planning, and Conservation System (IPaC) was accessed (March 25, 2014) and an IPaC Preliminary Species List was obtained. Both of these lists are included in Appendix A. Table 1-1 below shows the species and critical habitat, listing status, presence or absence of designated critical habitat, and effect determination for species with the potential to occur in the Project and Action Areas.

Table 1-1. USFWS Listed Species and Effect Determination

Species	USFWS Listing Status	Critical Habitat County/Project Area	Species Effect Determination	Critical Habitat Effect Determination
Mexican Spotted Owl (<i>Strix occidentalis lucida</i>)	Threatened	Yes/No	May Affect / Not likely to Adversely Affect	No Effect
Southwestern Willow flycatcher (<i>Empidonax traillii extimus</i>)	Endangered	No/No	May Affect / Not likely to Adversely Affect	--
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>)	Proposed Threatened	--	Will Not Jeopardize the Continued Existence	--
Bonytail (<i>Gila elegans</i>)	Endangered	Yes/No	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Colorado pikeminnow (<i>Ptychocheilus lucius</i>)	Endangered	Yes/Yes	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Humpback chub (<i>Gila cypha</i>)	Endangered	Yes/No	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Razorback sucker (<i>Xyrauchen texanus</i>)	Endangered	Yes/Yes	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect

The following threatened, endangered, candidate, or proposed species were identified on both of the County USFWS ESA lists, but were not identified as species that should be considered in an effects analysis, according to the USFWS IPaC Preliminary Species List. The proposed project would have No Effect to these species or their critical habitat as they were not included in the USFWS IPaC Preliminary Species List. McMillen performed additional research and concluded that these species and critical habitat are not located within or near the project area.

- California Condor (*Gymnogyps californianus*)
- Greater Sage-Grouse (*Centrocercus urophasianus*)
- Jones Cycladenia (*Cycladenia humilis* var. *jonesii*)
- Maguire daisy (*Erigeron maguirei*)
- Wright fishhook cactus (*Sclerocactus wrightiae*)
- Last Chance townsendia (*Townsendia aprica*)
- San Rafael cactus (*Pediocactus despainii*)
- Winkler cactus (*Pediocactus winkleri*) and
- Barneby reed-mustard (*Schoenocrambe barnebyi*)

1.1.1 Project Responsibilities

Project implementation responsibilities are as follows:

Funding Agency

- NRCS – Bronson Smart (State Engineer)
125 South State St, Room 4010
Salt Lake City, Utah 84138-1100

Project Sponsor (Construction Implementation)

- Utah Department of Agriculture and Food – Thayne Mickelson (Executive Director of the Utah Conservation Commission)
350 N Redwood Road
Salt Lake City, UT 84114-6500

Concept Design Engineer

- McMillen, LLC – Dan Axness, P.E (Civil Engineer)
1401 Shoreline Drive, Suite 100
Boise, Idaho 83702

BA Author

- McMillen, LLC – Greg Allington (Biologist)
1401 Shoreline Drive, Suite 100
Boise, Idaho 83702

1.2 Project History

The Green River Diversion, also known as the Tusher Diversion, was constructed in the early 1900s and has been modified over the years to maintain the structure. During the 2010/2011 flood events, flows in the Green River caused severe damage to the diversion structure, compromising its structural integrity. USDA-NRCS has granted financial and technical assistance to the project sponsor, Utah Department of Agriculture and Food (UDAF), through the Emergency Watershed Protection (EWP) program to repair damage that occurred from the 2010/2011 flood events. Flood damage repair work would be conducted

in the river, along the banks, and in the adjacent upland where ESA listed species have been documented or could occur. This BA analyzes potential impacts to listed species and designated critical habitat from the proposed Project Actions.

1.3 Federal Consultation to Date

- August 20, 2012 – Project Kick-off Meeting. Agency attendees included NRCS, BOR, BLM, USFWS, NPS, UDAF, UDWR, Utah Division of Water Rights, UACD, FFSL, Green River Canal Company, and local water users.
- Bi-weekly Meetings (1st and 3rd Monday of every month) – from project kick-off through Final EIS and ROD, these informal calls have been open to the project team which has included lead, cooperating, and participating agencies as well as stakeholders.
- October 30, 2012 – EA Scoping Notice. Public and agency meeting notice. Scoping comment period October 30 – November 30.
- November 15, 2012 – EA Agency Scoping Meeting. Agency attendees included NRCS, BOR, BLM, USFWS, NPS, UDAF, UDWR, Utah Division of Water Rights, UACD, FFSL, Green River Canal Company, and local water users.
- December 17, 2012 – McMillen met with Kevin McAbee of USFWS (Recovery Program) to discuss design potentials including the following: pit tag antennas, irrigation, entrainment issues, schedule, swimming speeds, timing, spawning movement, diversion height, and diversion water supply at fish passage.
- January 16, 2013 – Concept Design Meeting with Upper Colorado River Endangered Fish Recovery Program. Agency attendees included BOR, Colorado Parks and Wildlife, USFWS and Recovery Program, NRCS, NPS, WAPA, and Wyoming Game and Fish. Discussion included introduction of the project, concept design, e-barrier, fish barrier, fish passage, PIT tag readers, river hydrology, and the NEPA process.
- February 22, 2013 – Meeting with SHPO regarding the Green River Diversion EA. In attendance were representatives of the USFWS, BLM, SHPO, NRCS, UACD, GRCD, and local water users. Discussed likelihood of adverse effect to the historic diversion structure and the possibility of transitioning to an EIS.
- February 22, 2013 – E-Barrier Meeting. Attendees included local irrigators, NRCS, Recovery Program and USFWS, BOR, and Smith-Root. Discussed the purpose of the e-barrier and potential locations, fish bypass, costs, and hydraulic modeling.
- May 28, 2013 - Scoping notice to the USFWS identifying the project location, purpose and reasons for preparing an EIS. The USFWS sent a response to the scoping notice July 1, 2013 stating that "...it is important that the rehabilitation of the Green River Diversion consider impacts to federally listed fish species." The USFWS indicated that bonytail, Colorado pikeminnow, humpback chub and razorback sucker are four federally endangered species that all inhabit the

Green River. The Service identified four considerations for the design and modification to the Green River Diversion, and how it may impact the endangered fish species. The following is the Service-provided considerations including how the impacts to the fish species may be avoided, minimized or mitigated:

- Fish Passage – Providing safe, effective fish passage for both up and downstream movement year round in most years;
 - Reducing Construction Impacts – Avoiding impacts whenever feasible by following proper construction BMPs, work timing, material selection and de-watering protocols;
 - Maintaining Habitat – Maintaining suitable habitat in the project vicinity, by providing adequate hydrological, thermal and chemical conditions; and
 - Electrical Barrier Component – Assisting the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) in the effective design, construction, and operation of an electric barrier to prevent fish entrainment into the Green River Canal and Thayn Hydroelectric facility.
- July 1, 2013 - the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) Director Thomas Chart provided an email listing the Recovery Program flow priorities, also consistent with the USFWS position, relating to the Green River Diversion Rehabilitation.
- September 25, 2013 – Draft Concept Design review; comments received from K. McAbee.
- November 4, 2013 – Preliminary Draft EIS #1 issued to internal cooperating and participating agency team for review. Comments received from K. McAbee.
- January 13, 2014 - Preliminary Draft EIS #2 issued to internal cooperating and participating agency team for review. Comments received from K. McAbee.
- March 14, 2014 - NRCS prepared a Draft EIS notice of availability and submitted the notice to the USFWS. The USFWS sent a response on April 18, 2014 providing comments on the Draft EIS and the Section 7 process.
- May 20, 2014 – NRCS submitted the Draft BA to USFWS (Kevin McAbee) for review and comment. Kevin McAbee provided comments back on May 28, 2014.
- May 30, 2014 – NRCS submitted the revised Draft BA to USFWS (Kevin McAbee) for review and comment. Kevin McAbee provided comments back on June 7, 2014.

SECTION 2

PROJECT ACTION AND ACTION AREA

2.1 Project Action Description

The USDA-NRCS is working with UDAF through the EWP program to rehabilitate the existing Green River Diversion system to maintain water delivery to water rights holders. The Green River Diversion Rehabilitation in Grand and Emery Counties would consist of demolishing the existing diversion structure and ancillary components and installing a new diversion structure and ancillary components in the same location. The existing diversion structure would be replaced in the current alignment and various upgrades would be incorporated into the diversion structure to meet current engineering standards and technology as well as current Federal, State, and local permitting regulations. A detailed description of the Project Action and associated project area is provided in this section. A project area map is included in Map 2 and project photographs are located in Appendix B.

Diversion Structure Replacement

The existing concrete diversion structure would be completely demolished and disposed offsite at an appropriate facility. A new concrete/sheetpile diversion structure would be installed in the same historic alignment in the same configuration. The 750-foot, arc-shaped crest of the weir would be leveled to an elevation of 4086.7' to ensure water delivery. A grade-controlled riprap apron (1.4 acres) would be placed on the downstream side of the diversion structure to prevent scouring and turbulent flow conditions, as well as to facilitate fish passage at low flows. Approximately 0.5 acres of riparian habitat would be cleared as part of the project. There would be approximately 14.5 acres of temporary disturbance to the Green River during construction.

Water Control Gates

Two new gates for water control and sluicing would be installed on the east side of the diversion structure. A new bulkhead gate structure and 80-foot raceway to the water wheel would also be installed on the east side to maintain existing water rights. On the west side of the diversion structure, the existing gate structure would be replaced to provide more efficient water control and sluicing capabilities for the Green River Canal and Thayne powerhouse raceway. To reduce debris collection at the gates and as a safety measure, two deflection log booms would be positioned across the raceway entrance. The 100-foot long west side and 170-foot long east side log booms would tie into a sluice gate in order to pass the debris over the weir and avoid blockages. At the east side, a new siphon intake gate for the East Side Canal would be constructed. The gate would operate as a slide gate, allowing water to flow into the existing siphon intake and on to the East Side Canal. The gate would not be screened, which does allow fish to be entrained into the East Side Canal. However, fish entrained in the canal would be rerouted back to the river through the East Side Canal Sediment Sluice and Fish Bypass Structure (see below).

Sediment Sluice and Fish Bypass Structure

As mentioned above, fish entrained in the East Side Canal would be rerouted back to the river through the East Side Canal Sediment Sluice and Fish Bypass Structure. This structure would be located in-line with the East Side Canal, approximately 0.44 miles downstream of the diversion structure and would be passively operated during the irrigation season from April 1 through October 31. Outside the irrigation season, the gates to the East Side Canal would be closed. Water passing into the Sediment Sluice and Fish Bypass Structure would be cleaned of fine sediment by an underflow drain routing water back to the river. Clean water would then pass through a fish screen with an approach velocity of no more than 0.4 feet per

second (fps) (Childs and Clarkson 1996). Any fish remaining would be passed back into the river with a bypass pipe. Clean, fish-free water would then enter the East Canal for irrigation end-use. Both the East Side Canal siphon and the bypass pipe would be outfitted with PIT tag detectors to monitor entrainment and return.

8 Gate Structure Replacement

The existing slide gate structure at the entrance to the Green River Canal and Thayn powerhouse raceway would be replaced with a radial gate structure.

Fish Passage

Downstream fish passage across the diversion structure would be provided along the length via notches in the structure. There would be three 10-foot wide notches distributed evenly across the dam centerline and recessed one foot below the dam crest. The slope of each notch would parallel the dam crest, eventually dropping vertically approximately 1 foot before a gradual riprapped slope. Each notch would be outfitted with passive integrated transponder (PIT) tag detectors in order to track the movement of tagged fish through the notch.

On the east side on the diversion structure, adjacent to the water wheel raceway, there would be an upstream fish passage channel approximately 10 feet wide and 180 feet in length, with a uniform channel slope of 2.5%. The channel would be roughened with cobble and boulders that would provide temporary refuge to fish and would help create sufficient swimming depth at extreme low flows. The channel would be designed to accommodate fish during the vast majority of flows and would be designed to pass fish that are 200 millimeters or longer by accommodating swimming speeds of up to 3.9 fps (Berry 1985; Childs 1996). PIT tag detectors would be placed at the entrance/exit of the upstream fish passage channel in order to record fish movement over and around the diversion structure.

Boat Passage

Downstream boat passage would be located in the center of the diversion structure via a notch to allow boat passage at lower flows in the Green River. The boat passage section would consist of a stepped opening 20-feet wide by 5-feet deep in the diversion structure with a more gradual slope into the tailwater to provide safer rafting over the structure. The boat passage would be lined with concrete, outfitted with a PIT tag detector and flows could be regulated using stop logs at the entrance.

Sediment Removal

Approximately 1,100 cubic yards of sediment and boulders would be removed from the Tusher Wash deposition area below the diversion structure and used for construction or disposed offsite.

2.1.1 Proposed Flow Allocations

The rehabilitation of the diversion structure must adhere to all applicable Federal, State, Tribal, and local laws and regulations. The following lists the proposed flow allocations per Water Rights, ESA, and Utah State Navigability Laws:

Table 2-1. Proposed Flow Allocations

Flow Allocation	Cubic feet per second (cfs)
Irrigation	219
Hydropower	600
Future Green River Canal Fish Barrier Return Flow	50
East Side Canal Fish Screen Return Flow	20
Upstream Fish Passage	30
Downstream Fish Passage	40
Downstream Boat Passage	147
TOTAL	1,106

An agreement regarding water flow allocations will be developed between all parties with interest in the function of the diversion and appurtenances in conjunction with the Operation and Maintenance Plan. This agreement will outline the flow allocations and priorities during periods of low flow where conditions in the Green River could drop below 1,106 cfs.

2.2 Action Area

The action area is defined to mean “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action”. Because the existing diversion alters water quantity in the Green River, the action area for the four Colorado River endangered fish and their designated critical habitat includes the Green and Colorado Rivers between the diversion structure and Lake Powell for the purposes of this consultation.

The action area for the construction component for ESA-listed species (shown on Map 5) includes: the stretch of the river (including the 100-year floodplain) extending approximately one mile upstream to one mile downstream of the existing diversion structure, including access roads and staging areas. The action area for the Green River project related to ESA listed bird species is defined as a 0.5 mile radius around the existing diversion structure. This buffer signifies the extent that general construction noise can travel until it typically reaches background levels.

The construction footprints of the Project include direct impacts to upland, riparian, riverbank, and riverbed habitat, some of which are permanent. Permanent disturbances include alteration of the riverbed and riverbank in designated critical habitat for listed fish species. Construction footprints such as staging and access areas will be revegetated and therefore represent temporary disturbances. Construction activities within the riparian corridor may disturb suitable habitat for fish species through equipment travel and operation and may also create turbid water that may travel downstream potentially affecting fish species.

The action area for the water use component (Map 5) of this project is the Green River to the confluence with the Colorado River, and the Colorado River to Lake Powell. The stretch of the Green and Colorado Rivers is considered the action area because changes in the quantity of water alter habitat conditions downstream.

2.3 Conservation Measures

Project construction activities will comply with all applicable Federal, State, and local laws and ordinances. Project impacts to the environment will be avoided and minimized to the greatest extent practical by following conservation measures during project construction activities. The following describes the conservation measures for the project. A complete list of the BMPs to be implemented is included in Appendix C.

2.3.1 Fish Species

The following fish species conservation measures have been committed for implementation by NRCS and UDAF during the construction phase:

1. Construction activities will avoid, to the extent feasible, fish habitat such as backwaters and side channels;
2. Best Management Practices (BMPs) will be used to minimize sedimentation, temporary erosion of stream banks, and needless damage or alteration to the streambed. BMPs should also ensure construction related byproducts do not enter the riverine ecosystem that will cause negative impacts to aquatic organisms;
3. Construction activities will be timed to reduce impacts to seasonal fish movements, spawning activity, and rearing activity (April 1 through August 31) depending on the water year;
4. Construction activities that occur in the river will minimize impacts to fish:
 - a. The construction contractor will contact the UDWR to complete a fish survey, clearance and/or salvage immediately prior to and following:
 - i. Construction of proposed earth cofferdams;
 - ii. Removal of the cofferdams; and
 - iii. Any other occasion when activities occur in the river or in the exposed river channel.
 - b. The contractor will be responsible for reporting any observed take of fish (stressed or dying) immediately to the USFWS office. After placement of the cofferdam, a report will be submitted to our office that summarizes activities;
 - c. The construction contractor will coordinate with the UDWR to have a federally permitted crew on site to translocate fish stranded behind the constructed cofferdam to the Green River prior to dewatering the work areas;
 - d. Pumps used to dewater the work area will be screened (1/4" mesh) to minimize entrainment of fish;
 - e. The contractor will minimize the time that the cofferdam is in the river;
 - f. As practicable, sections of the cofferdam will be placed gently in the channel to minimize disturbance to fish and the river substrates.
5. All non-permanent materials placed in the river will be removed from the river after completion of the in channel portion of project;
6. Construction activities will be confined to previously disturbed areas where possible for such activities as work, staging, and storage; waste areas; and vehicle and equipment parking areas. Vegetation disturbance should be minimized as much as possible;
7. All disturbed areas resulting from the project will be graded and rehabilitated to as near their pre-project construction condition as practicable. After completion of the construction and restoration activities, disturbed areas will be seeded at appropriate times with weed-free, native seed mixes having a variety of appropriate species (especially woody species where feasible) to help hold the soil around structures, prevent excessive erosion, and to help maintain other riverine and riparian functions. The composition of seed mixes will be coordinated with wildlife habitat specialists. Weed

control on all disturbed areas will be required. Successful revegetation efforts must be monitored and reported along with photos of the completed project; and

8. UDAF will acquire a USACE Section 404 Permit, Utah State Stream Alteration Permit, Utah Pollutant Discharge Elimination System Permit, and Water Quality Certification. UDAF will follow all requirements therein.

2.3.1.1 Operational Conservation Measures

UDAF, local stakeholders, the Recovery Program, and the State of Utah will be responsible for the operation, maintenance, and future modifications to the structures on private property. A specific O&M Plan will be prepared by the NRCS, UDAF, local stakeholders, the Recovery Program, and the State of Utah that will govern the use of the structures. The specific details of the O&M Plan and agreement will be determined during final design and be entered into by all applicable parties prior to the start of construction activities.

1. NRCS and the water users are funding the fish passage, and providing the means to operate it under a variety of flows.
 - a. *Downstream Fish Passage Notches* — Three 10-foot wide fish passage notches would be placed along the crest of the dam. The notches would be separated by approximately 140 feet, with the middle notch near the center of the dam crest. The notch inverts would be at elevation 4085.7'. The notches would be equipped with stop-logs ensuring that flow through the notches was not triggered until upstream fish passage was provided sufficient flow.
2. Water users will visually inspect downstream fish passage notches each month and report any impinged debris.
3. The sluicing screen on the East side canal will be operational at all times that the East Side Canal is operating. It will be maintained by the East Side Canal and any impinged fish will be reported to the FWS for removal and documentation.
4. Property easements shall be agreed upon and in place to accommodate the necessary upland components for the PIT tag antennas, including, but not limited to solar panels, electrical wiring, and communication equipment. Recovery Program personnel shall be allowed continuous access to these components.
5. NRCS will pay for 75% of the PIT antenna equipment, installation, and maintenance contract.
6. The raceway radial gates will accommodate 50 cfs of extra flow needed for the future fish return system in the Green River Canal that would be built by the Recovery Program.
7. Other commitments:

Water rights may be temporarily impacted during project construction, however the project commitment to the water users includes the following (McMillen 2014):

 - Deliver 773 cfs from April to October to Green River Canal and raceway.
 - Deliver 650 cfs from November to March to Green River Canal and raceway.
 - Schedule temporary flow shutdowns in winter to avoid impacts to hydropower production.
 - Deliver 65 cfs April to October to Hastings Ranch pump station.
 - Deliver 31 cfs April to October to the East Side Canal siphon.

2.3.2 Migratory Birds

The following migratory bird conservation measures will be committed for implementation by NRCS and UDAF:

1. To minimize potential impacts to migratory bird species, the contractor will not conduct project construction activities when birds are nesting. Nesting surveys will be completed by NRCS if construction is scheduled to occur between June 1st and August 31st; and
2. The contractor will not remove riparian trees unless it is either a non-native tree or specified in the construction drawings.

2.3.3 General Conservation Measures

The following general conservation measures have been committed for implementation by NRCS and UDAF:

2.3.3.1 General

1. A preconstruction meeting will be held by the NRCS on-site inspector, NRCS biologist, and a representative from the sponsor. The meeting will cover all conservation measures and should be presented to all onsite project implementation staff. A simple handout of the conservation measures will be handed out to all implementation staff.
2. Riprap design and installation techniques shall be approved by the UDWR and USFWS to avoid providing habitat for non-native fish species.
3. Instream work should only occur during low flow periods and should not occur if fish are actively spawning and/or larvae are in the water column and/or eggs in the gravels. Care should be taken to minimize sedimentation resulting from bank or stream bed disturbance.
4. Staging areas should be located outside of the Green River 100-year floodplain in previously disturbed sites.
5. If construction materials are displaced by high flow the applicant will contact the USFWS, Utah Field Office (currently Mr. Paul Abate, 801-975-3330; ext 130) as soon as possible to coordinate the least intrusive retrieval methods.
6. Confine construction activities and equipment to the designated construction work areas. These areas will be designated by lathes and flagging. Construction activities will be contained in these areas. New areas will need approval. Sensitive riparian zones and drainages will be designated by staking and flagging the perimeter.
7. Equipment should work from the top of the bank or from the channel behind the cofferdam, when allowable, to minimize disturbance to the riparian area and to protect the banks. Heavy equipment should avoid crossing and/or disturbing wetlands.
8. Ingress and egress access should be kept to a minimum.

2.3.3.2 Chemical Pollution Prevention

1. The contractor will identify and minimize the potential for accidental spills of hazardous materials by implementing BMPs and measures specified in the storm water pollution prevention plan (SWPPP). The contractor will develop a spill prevention, control, and countermeasures (SPCC) plan and will follow it during construction.
2. Food-grade hydraulic fluids will be required for use on all equipment.
3. Equipment must be decontaminated (per Utah Division of Wildlife Resources Decontamination Certification) to remove aquatic nuisance organisms, noxious weeds/seeds and petroleum products prior to moving on site.
4. Fueling machinery should occur off site or in a confined, designated area at a distance of 100 feet or greater from waterways and wetlands to prevent spillage.

5. The contractor will provide watertight tanks or barrels to dispose of chemical pollutants that are produced as by-products of the construction activities, such as drained lubricating or transmission fluids, grease, soaps, concrete mixer wash water, or asphalt. At the completion of the construction work, these containers will be removed and the area restored to its original condition. Sanitary facilities, such as chemical toilets, will be located at a distance sufficient to prevent contamination of any water source. At the completion of construction activities, facilities will be disposed of without causing pollution to the river or soils.
6. Materials should not be stockpiled in the riparian area or other sensitive areas, i.e., wetlands.
7. Fill materials should be free of fines, waste, pollutants, and noxious weeds/seeds.
8. A hazardous materials spill kit will be kept on site during construction that is appropriate for the solvents involved in operation and maintenance of vehicles and machinery used during the Project. Use equipment mats to prevent leakages from entering the river.
9. Concrete, grout, cement mortar, and solid and source site materials will be stored in the staging area.
10. Broadcast applications of herbicides will be prohibited within the Green River's 100-year floodplain; if necessary, spot treatments will be applied by hand using herbicides approved for aquatic habitats by the U.S. Environmental Protection Agency in order to treat noxious weeds within the floodplain.

2.3.3.3 Stormwater Pollution Prevention

1. A Utah Pollutant Discharge Elimination System permit will be required for all stormwater runoff generated by the project if the project disturbs more than one acre of ground. The project will abide by all applicable permit requirements and state laws for stormwater discharge. A construction SWPPP will be developed by UDAF for the project.
2. Best management practices (BMPs) will be used to limit the release of fine sediment into the Green River during construction in areas adjacent to the river. BMPs include the use of silt-free fill, riprap (if used for rock slope protection), and silt barriers.
3. If project activities include the construction of riprap walls or if activities will alter any previously constructed riprap walls, riprap sections must be built or reconstructed such that: 1) all potential interstitial spaces are filled with sediment up to the corresponding water level for a 5-year flood event; 2) cutoff walls are installed in riprap sections to limit fresh water flow; and 3) as appropriate, rocks in gabion baskets are covered with geotextile fabric to prevent entry by nonnative fish. These measures will be specified in any Project related construction plans and any deviation from use of these measures will be approved by the USFWS. Riparian vegetation will also be installed at the foot or toe of newly placed riprap structures.
4. Bank stabilization and erosion-control structures will be designed to maintain or enhance natural stream function (sinuosity, gradient, hydrology, and sediment transport). Stabilization structures will be defined during the Clean Water Act Section 404 permitting process with the U.S. Army Corps of Engineers.
5. Materials will not be stockpiled immediately adjacent to the river channel. Stockpiles will be covered if not used for 7 days or more.

2.3.4 Construction Schedule, Sequencing and Work Windows

Construction activities will occur over a 10-month time frame starting after the irrigation water is shut off to the East Side Canal and the Green River Canal in the fall. Construction is scheduled to continue through the spring and end mid-summer. We expect construction to begin in October 2014, but if that timeline cannot occur, construction will begin in October 2015. Appendix C includes a full construction schedule with the following major milestones:

- October 2014: Pre-Construction Meeting to Review Project and Environmental Stipulations; NOI Issued.
- October 2014: Install BMPs (see Appendix C for complete list)
- October 31, 2014: Irrigation Water Shutoff
- November 2014: Phase I (east side) Sheetpile Installation and Dewatering of Construction Area
- November 2014: Phase I Fish Salvage
- December 2014: Phase I Diversion Structure Demolition
- December 2014: Phase I New Diversion Structure Installation Including Upstream Fish Passage Channel
- December 2014: Phase I Sheetpile Wall Cutoff to Top of New Diversion Structure
- December 2014: East Side Canal Inlet Installation, Fish Screen Installation
- December 2014: Sediment Deposition Area Removal and Relocation
- January 2015: Phase II (west side) Sheetpile Installation and Dewatering of Construction Area
- January 2015: Phase II Fish Salvage
- January 2015: Phase II Diversion Structure Demolition
- February 2015: Phase II New Diversion Structure and 8 Gate Structure Installation
- April 1, 2015: Irrigation Water Startup

The allowable construction work window for the Proposed Action includes the following:

- Fish (Green River): September 1st through March 31st
- Migratory Birds: September 1st through May 31st

2.4 Mitigation

Permanent and temporary project impacts to the environment will be self-mitigated via the incorporation of improved fish passage and detection methods on the diversion structure itself. These specific mitigation measures include the following:

- Provide upstream fish passage past the diversion structure;
- Provide safe downstream fish passage via notches in the diversion structure;
- Provide PIT tag detectors to sense and record fish movement over and around the diversion structure; and
- Install fish screen and bypass at the East Side Canal with passage back to the river.

2.5 Impacts Summary

ESA listed species and critical habitat occur within Emery and Grand Counties and are expected to be impacted during the rehabilitation of the Green River Diversion. The following impacts are anticipated:

Table 2-2. Impacts Summary to Critical Habitat

Impact	Permanent Impacts	Temporary Impacts
Riprap Apron	1.4 ac	--
Sediment Removal	1,100 cy	--
Riparian Habitat	0.5 ac	--
Wetlands	0.4 ac	--
In-Water Work	--	14.5 ac
TOTAL	2.3 ac / 1,100 cy	14.5 ac

SECTION 3

SPECIES AND CRITICAL HABITAT STATUS

3.1 Species List

The USFWS Environmental Conservation Online System was accessed on March 25, 2014 to obtain a species list for Emery and Grand Counties. Table 3-1 below identifies the species included in the Emery and Grand Counties' species lists along with their listing status and critical habitat designation.

Additional research and agency coordination was performed to determine which species may occur within the project area and required evaluation in this BA. The USFWS Information, Planning, and Conservation (IPaC) System was accessed on March 25, 2014 and an IPaC Preliminary Species List was obtained. The USFWS IPaC Preliminary Species List includes listed species that may occur in the project area and should be considered in an effects analysis. Correspondence with USFWS and Recovery Program, as described in Section 1.3, also identified specific species that may be impacted by project activities. Agency coordination also resulted in the preparation of how to best avoid, minimize, and mitigate potential impacts to ESA listed species. Site visits were performed on November 15, 2012, August 20, 2012, February 22, 2013 and February 6, 2014 by a McMillen biologist to assess damages and potential impacts to fish, wildlife, and plant species.

Table 3-1. USFWS Listed Species

Species	USFWS Listing Status	Critical Habitat in County	Critical Habitat in Action Area/Downstream*
Fish			
Bonytail chub (<i>Gila elegans</i>)	Endangered	Yes	No/Yes
Colorado Pikeminnow (<i>Ptychocheilus lucius</i>)	Endangered	Yes	Yes/Yes
Humpback Chub (<i>Gila cypha</i>)	Endangered	Yes	No/Yes
Razorback Sucker (<i>Xyrauchen texanus</i>)	Endangered	Yes	Yes/Yes
Birds			
Greater Sage-Grouse (<i>Centrocercus urophasianus</i>)	Candidate	--	--
Mexican Spotted Owl (<i>Strix occidentalis lucida</i>)	Threatened	Yes	No/No
California condor (<i>Gymnogyps californianus</i>)	Experimental Population, Non-Essential	--	--
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>)	Proposed Threatened	--	--
Southwestern Willow flycatcher (<i>Empidonax traillii extimus</i>)	Endangered	No	No/No

Species	USFWS Listing Status	Critical Habitat in County	Critical Habitat in Action Area/Downstream*
Plants			
Barneby Reed-Mustard (<i>Schoenocrambe barnebyi</i>)	Endangered	--	--
Jones Cycladenia (<i>Cycladenia humilis</i> var. <i>jonesii</i>)	Threatened	--	--
Last Chance Townsendia (<i>Townsendia aprica</i>)	Threatened	--	--
San Rafael Cactus (<i>Pediocactus despainii</i>)	Endangered	--	--
Winkler Cactus (<i>Pediocactus winkleri</i>)	Threatened	--	--
Wright Fishhook Cactus (<i>Sclerocactus wrightiae</i>)	Endangered	--	--
Maguire daisy (<i>Erigeron maguirei</i>)	Recovery	--	--

*Critical habitat is located within the larger Action Area for water usage downstream of the project area and may be temporarily impacted during construction dewatering.

Based on habitat conditions and species occurrences in the project and action areas, seven ESA listed species have been identified that could be impacted by project activities: Bonytail chub, Colorado pikeminnow, Humpback chub, Razorback sucker, Mexican spotted owl, Yellow-billed cuckoo and Southwestern willow flycatcher. These species were analyzed as described in this BA.

3.2 No Effect Determination

The following species were identified on the USFWS Grand and Emery Counties list but were not included in the USFWS IPaC Preliminary Species List and based on research conducted by McMillen are not expected to occur in the Action Area. Therefore, there will be No Effect on these species or their critical habitat.

Greater Sage-Grouse

The greater sage-grouse inhabits sagebrush plains, foothills, and mountain valleys that contain sagebrush as the primary plant community. Based on a review of the Utah Conservation Data Center (UCDC) species distribution map, species distribution areas are not located within or near the action area. The action area is comprised of predominantly Russian olive, willow, tamarisk, and cottonwood plant species. The east adjoining property is cultivated agricultural land and the west adjoining property is undeveloped with sparse areas of sagebrush. There are no known occurrences of the species in the action area based on information provided by the UDWR, and suitable habitat does not occur within the action area.

California Condor

Condors prefer rocky and brushy areas near cliffs at low and moderate elevations. Roosting occurs in snags, tall open-branched trees, or cliffs near foraging grounds. The species typically feed on carrion of dead sheep, cattle, and deer. Marginal foraging habitat is available in the vicinity of the action area; however, it is unlikely that this species would be found within the actual action area. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. There are no known occurrences of the species in the action area based on information provided by the UDWR.

Barneby Reed-Mustard

This species grows on coarse soils derived from cobble and gravel river terrace deposits, or rocky surfaces at approximately 4,800 to 6,500 feet in elevation. Barneby reed-mustard can be found growing with other desert shrubland plants including shadscale, Indian ricegrass, and pygmy sagebrush. Critical habitat has not been designated for the species. The Barneby reed-mustard has not been recorded as inhabiting the action area and it is not expected to occur within the action area.

Jones Cycladenia

Jones Cycladenia is unlikely to be found on the project site since it is typically located at elevations between approximately 4,390 and 6,000 feet, according to information obtained from the USFWS website. The species typically exist on salt clay and gypsum soils derived from the Chinle, Cutler, and Summerville formations. The project action area is located on Holocene alluvium and alluvial fan deposits and is at approximately 4,090 feet elevation. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. Therefore, no suitable habitat occurs in the action area and the species is not expected to occur in the action area. Critical habitat has not been designated for the species.

Last Chance Townsendia

The action area is located at approximately 4,090 feet elevation. According to information obtained through the UCDC, the species is unlikely to be found in the action area since it is typically located at elevations between approximately 5,530 and 8,000 feet. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. Additionally, the USFWS IPaC Preliminary Species list did not include the Last Chance Townsendia as a species that should be considered in an effects analysis. Therefore, no suitable habitat occurs in the action area and the species is not expected to occur in the action area. Critical habitat has not been designated for the species.

San Rafael Cactus

The species occurs on benches, hilltops, and gentle slopes at elevations between approximately 4,760 and 6,825 feet, according to information obtained through the UCDC. The species is unlikely to be found in the action area since it is located at approximately 4,090 feet in elevation. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. Additionally the USFWS IPaC Preliminary Species list did not include the San Rafael Cactus as a species that should be considered in an effects analysis. Therefore, no suitable habitat occurs in the action area and the species is not expected to occur in the action area. Critical habitat has not been designated for the species.

Winkler Cactus

The species occurs on benches, hilltops, and gentle slopes at elevations between approximately 4,890 and 6,595 feet, according to information obtained through the UCDC. The species is unlikely to be found in the action area since it is located at approximately 4,090 feet in elevation. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. Additionally the USFWS IPaC Preliminary Species list did not include the Winkler cactus as a species that should be considered in an effects analysis. Therefore, no suitable habitat occurs in the action area and the species is not expected to occur in the action area. Critical habitat has not been designated for the species.

Wright Fishhook Cactus

The species is unlikely to be found in the action area since it is typically located at elevations between 4,200 and 7,600 feet, according to information obtained USFWS website, and the action area is located at

approximately 4,090 feet elevation. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. Additionally the USFWS IPaC Preliminary Species list did not include the Wright fishhook cactus as a species that should be considered in an effects analysis. Therefore, no suitable habitat occurs in the action area and the species is not expected to occur in the action area. Critical habitat has not been designated for the species.

Maguire Daisy

The species primarily occurs on mesa tops at elevations between approximately 5,200 and 8,600 feet, according to information obtained through the USFWS website. The species is unlikely to be found in the action area since it is located at approximately 4,090 feet in elevation. Based on a review of the UCDC species distribution map, species distribution areas are not located within or near the action area. Additionally the USFWS IPaC Preliminary Species list did not include the Maguire Daisy as a species that should be considered in an effects analysis. Therefore, no suitable habitat occurs in the action area and the species is not expected to occur in the action area. Critical habitat has not been designated for the species.

3.3 Species Descriptions

3.3.1 Mexican Spotted Owl

The Mexican spotted owl is listed as a threatened species under the ESA (58 FR 14248-14271) and may occur within the vicinity of the action area on a transient basis. Along the Colorado Plateau, these owls occur in steep canyons, including those in southern Utah. Spotted owls feed mainly on rodents but also consume rabbits and some other vertebrates, including birds and reptiles, and insects. The species utilize suitable naturally occurring sites and nests built by other animals for nests. Nests are either in trees (primarily trees with broken tops), trunk cavities, or on cliffs.

The spotted owl occupies a variety of habitats in different parts of its range, including various forest types and steep rocky canyons. They can be found in forested mountains and canyons from southern Utah and Colorado to the mountains of Arizona, New Mexico, west Texas and even into the mountains of northern and central Mexico. Steep rocky canyon habitat is the primary habitat used by the species in Utah.

3.3.2 Yellow-Billed Cuckoo

The yellow-billed cuckoo is listed as a proposed threatened species under the ESA (77 FR 69993-70060) and may occur within the vicinity of the Action Area. Yellow-billed cuckoo typically inhabit lowland large space riparian areas (~100+ acres) with dense cottonwood trees, willows, and other riparian shrubs. They prey upon large insects from tree and shrub foliage. Historic range of the species included all states west of the Rocky Mountains and extended into southern British Columbia at the northern extent and into the northwestern states of Mexico at the southern limit. Currently, the species are limited to disjunct segments of riparian habitats from northern Utah, western Colorado, southwestern Wyoming, and southeastern Idaho southward in to northwestern Mexico and westward into southern Nevada and California. The species migrate to Utah in late May or early June to breed and migrate to northern South America to winter in late August or early September.

The primary threat to the cuckoo is the loss and degradation of habitat, particularly riparian forests (NatureServe 2014). Significant habitat degradation has been caused by the invasion of tamarisk (*Tamarix spp.*) and Russian olive (*Elaeagnus angustifolia*). These two plant species can change riparian forests by destroying community structure, and replacing three or four vegetation layers with one

monotonous layer. Human disturbance of riparian habitats (e.g., damming and flow alteration, cattle grazing) has allowed tamarisk to outcompete native vegetation. Tamarisk and Russian olive invasion typically coincides with the reduction or loss of bird species associated with cottonwood-willow habitat, including the reduction of cuckoo presence in these areas (NatureServe 2014).

3.3.3 Southwestern Willow Flycatcher

The southwestern willow flycatcher is listed as endangered under the ESA (60 FR 10694-10715) and may occur within the Action Area. It is a riparian obligate species, nesting in dense clumps of willow or shrubs with similar structure (alder, some saltcedar) along low-gradient streams, wetlands, beaver ponds, wet meadows, and rivers. The flycatcher is a small, neotropical migrant that breeds in dense riparian tree and shrub communities within the southwestern US (and possibly extreme northern Mexico). Throughout its range, the flycatcher's distribution follows that of its riparian habitat; relatively small, isolated, and, widely dispersed locales within a vast arid region. Flycatchers spend most of their lives on wintering grounds in Mexico, Central America, and northern South America. Only three to four months are spent on their breeding grounds, typically from May to August. Male flycatchers generally arrive first at a breeding site to establish territories.

The average flycatcher breeding patch is 8.5 hectares, although most patches are relatively small (median size of 1.8 hectares). Flycatchers are generally not found nesting in confined floodplains where only a single narrow strip of riparian vegetation develops, although they may use such vegetation if it extends out from larger patches, and during migration. Although most southwestern willow flycatchers return to former breeding areas, they regularly move among sites within and between years. Immigration and emigration among breeding sites may be common. There is minimal suitable habitat for nesting but they may be present within the Action Area on a transient basis to migrate through and forage.

3.3.4 Bonytail Chub

The bonytail chub is listed as an endangered species under ESA (45 FR 27710-27713) and has been documented to occur within the Action Area. In 2011, the Recovery Program crews caught bonytail 9 miles upstream of the diversion structure and in 2013 they were observed to be entrained in the Green River Canal (United States Department of the Interior [USDI] 2014). This fish is an exceedingly rare minnow originally native to the Colorado River (UCDC 2014). In the last decade, few reports of bonytail captures or observations have been made. Their current distribution includes the upper Colorado River basin system and captures have been made in the Green River, Yampa River, and the mainstem Colorado River in Cataract Canyon. In the Upper Colorado River Basin, bonytail are raised at the Ouray National Fish Hatchery, Ouray Unit in Vernal, Utah. Bonytail raised at this facility are stocked in the middle and lower Green River in Utah (Recovery Program 2014), and stocking goals for 2013 included the rearing of 10,000 bonytail. The primary threats to the bonytail are water resource developments (including diversion dams and reservoirs) and the introduction of non-native fish. These threats have resulted in decreased habitat and decreased recruitment.

Bonytail reach a maximum size of about 22 inches (55 cm), 0.5 pounds (1.1 kg) in weight, and live to be as old as 49 years. Bonytail prefer backwaters with rocky or muddy bottoms and flowing pools, although they have also been reported to occur in swiftly moving waters. Bonytail adults are largely omnivorous with a diet of terrestrial insects, plant debris, and algae, while young bonytail eat aquatic insects. Spawning occurs from May through July over rocky substrates. Natural reproduction of bonytail was last documented in the Green River in Dinosaur National Monument where spawning fish were captured from

mid-June to early July at water temperature of 18°C (AGFD 2001). Young bonytails typically eat aquatic plants, while adults feed mostly on small fish, algae, plant debris, and terrestrial insects.

3.3.5 Colorado Pikeminnow

The Colorado pikeminnow is listed as an endangered species under ESA (32 FR 4001) and has been documented to occur within the Action Area. The Colorado pikeminnow was once common and abundant throughout its native range in both the upper and lower Colorado River basins. The majority of today's population exists in the Green River, Yampa River, lower Duchesne River, White River, Gunnison River, and the main stem of the Colorado River downstream to Lake Powell. Initially, the primary threat was habitat loss and fragmentation from the establishment of multiple reservoirs and dams. Subsequently, the threats have been habitat alteration from human regulated stream flows and the introduction of non-native fish.

The largest documented fish weighed in at 34 lbs (15.5 kg) and just under 39 inches (100 cm), although historic accounts estimated a maximum total length of about 71 inches (180 cm) and weight of 79 lbs (36 kg). Adult Colorado pikeminnow use relatively deep, low-velocity eddies, pools, and runs that occur in nearshore areas of river channels and tend to prefer habitat with high complexity. Adults will also use floodplain habitats, flooded tributary mouths, flooded side canyons, and eddies that are available during high flows. The Colorado pikeminnow is a highly migratory species; adults are understood to travel hundreds of kilometers to and from spawning areas, requiring long sections of river with unimpeded passage. Adults move to spawning areas in early summer and return to home ranges in August and September. Natural reproduction of Colorado pikeminnow is currently known to occur within the Yampa and Green Rivers in both confined and meandering, alluvial reaches. The Colorado pikeminnow is a warm water species that requires relatively warm temperatures for spawning, egg incubation, and survival of young. After emerging, larvae drift downstream to nursery backwaters in sandy, alluvial regions. Juveniles remain near nursery areas for the first 2 to 4 years of life, then move upstream and establish home ranges. The primary diet items for juvenile pikeminnow include cladocerans, copepods, and midge larvae, and as they grow, begin to consume insects. In adulthood, these fish are primarily piscivorous.

3.3.6 Humpback Chub

Humpback chub are listed as an endangered species under ESA (32 FR 4001) and have been documented to occur within the Action Area. Recovery Program crews documented humpback chub between Swasey's and Nefertiti, and have also captured individuals as close as three miles upstream of the diversion structure. In 2013, one humpback chub was observed to be entrained in the Green River Canal (USDI 2014). Humpback chub once inhabited the swift, whitewater areas found in the canyons of the Colorado River and four of its tributaries: the Green, Yampa, White, and Little Colorado Rivers. Today, five self-sustaining populations of humpback chub occur in the Upper Colorado River Basin. Two to three thousand adults can occur in the Black Rocks and Westwater Canyon core population in the Colorado River near the Colorado/Utah border. Several hundred to more than 1,000 adults may occur in the Desolation/Gray Canyon core population in the Green River. Populations in Yampa and Cataract canyons are small, each consisting of up to a few hundred adults.

Humpback chub are long-lived, big-river cyprinids that can attain a maximum size of about 19 inches (48 cm) and 2.5 lbs (1.15 kg), and live to about 25 years. The humpback chub evolved in seasonally warm and turbid water and is adapted to the unpredictable hydrologic conditions that once characterized the native Colorado River system. Humpback chub live and complete their entire life cycle in canyon-bound reaches characterized by deep water, swift currents, and rocky substrates. Subadults use shallow,

sheltered shoreline habitats, while adults use primarily offshore habitats of greater depths. The humpback chub requires relatively warm temperatures for spawning, egg incubation, and survival of larvae. Spawning occurs from March to May in waters of 60 to 72° F (16 to 22°C). Juvenile humpback chub require slow moving waters in shoreline habitats. Humpbacks are opportunistic omnivores with a diet consisting of insects, crustaceans, plants, seeds, and occasionally small fish and reptiles.

3.3.7 Razorback Sucker

The razorback sucker is listed as an endangered species under the ESA (56 FR 54957-54967) and has been documented to occur within the Action Area. Recovery Program crews have captured razorback suckers up to the diversion structure and in 2013 large numbers were observed to be entrained in the Green River Canal (USDI 2014). The range of the razorback sucker is found throughout the main stem Green River from the confluence with the Yampa River to the confluence with the Colorado River. Additionally, populations occur in the lower Colorado River Basin in Lakes Mead & Mohave. Razorback sucker are raised in hatcheries and stocked into the Green River, including at the Green River State Park 6 miles downstream of the diversion structure. In 2013, 3,150 were stocked at this location.

The razorback sucker is a long-lived river catostomid reaching a maximum age of 44 years and a top size of about 39 inches (100 cm) and up to 15 lbs (5 to 7 kg). Adult razorbacks prefer habitats with deep eddies, backwaters, and flooded off-channel environments during spring, switch to runs and pools often in shallow water associated with submerged sandbars during summer, and may select low-velocity runs, pools, and eddies during winter flows. Spring migrations may be of long distance in the spring, with spawning typically occurring mid-April through June. Spawning occurs over bars of cobble, gravel, and sand substrates during widely ranging flows when water temperatures are typically greater than 57° F (14°C). Juvenile suckers use nursery habitats with quiet, warm, shallow water in littoral zones, backwaters, and inundated floodplains and tributary mouths downstream of spawning bars. The diet of riverine adult razorback sucker consists mostly of immature benthic organisms, and lesser amounts of algae, detritus, and inorganic material. Juvenile fish are similarly opportunistic.

3.4 Designated Critical Habitat

USFWS designated critical habitat for the Colorado pikeminnow, razorback sucker, bonytail chub and humpback chub in 1994 (59 FR 13374-13400). The Green River downstream to the Colorado River is designated critical habitat for both the Colorado pikeminnow and razorback sucker which is located within the Action Area. Critical habitat for bonytail chub and humpback chub is approximately 2¼ miles upstream from the immediate Action Area and extends north to Carbon County and also occurs downstream along the Colorado River (within larger Action Area for water usage).

USFWS designated critical habitat for the Mexican spotted owl in 2004 (69 FR 53182 83298). Mexican spotted owl critical habitat has been designated in Emery County but is located approximately 15.2 miles north of the Action Area.

USFWS designated critical habitat for the Southwestern willow flycatcher in 2013 (78 FR 344-534); however, critical habitat for the Southwestern willow flycatcher has not been designated in Emery or Grand County.

Critical habitat has not been designated for the yellow-billed cuckoo.

SECTION 4

EFFECTS OF THE ACTION

The project site is located on the Green River at the Green River Diversion located at 39° 4' 52.28" N latitude and 110° 8' 25.35" W longitude (WGS 84). BLM manages land on the west side of the project site and the eastern side used for agricultural purposes by private owners. The land underneath the Green River is owned by the State of Utah.

4.1 Mexican Spotted Owl

Suitable breeding/roosting habitat for the Mexican spotted owl is not located in the project Action Area. The closest Mexican spotted owl critical habitat to the action area is located approximately 15.2 miles to the north. There have been no known occurrences of the species within one mile of the project site based on information provided by the UDWR. Although critical habitat and suitable breeding/roosting habitat is not located in the Action Area, the species may occur in the vicinity on a transient basis.

4.1.1 Direct Impacts

The project action area does not contain suitable breeding/roosting habitat for the Mexican spotted owl and the species may only occur in the area on a transient basis. Direct impacts are expected to be insignificant and discountable to the Mexican spotted owl based on the lack of suitable habitat and very low likelihood of this species' presence during construction activities.

Critical habitat for the species is not located in the action area and the project will not have an impact to the Mexican spotted owl critical habitat.

4.1.2 Indirect Impacts

The proposed project includes incorporating a safe wet boat passage allowing boating on the Green River to extend from Flaming Gorge to Lake Powell, or to connect Swasey's Beach/Boat Ramp and the Green River State Park. The inclusion of the boat passage would indirectly attract additional recreationists to the Action Area. Increased human activity near nesting, roosting or foraging sites may result in the species abandonment of an area. Increased human activity may also affect habitat indirectly from trampling, vegetation removal, or increased fire risk. The project could indirectly impact the species by increasing human activity from additional recreationists along the Green River, however, the Action Area does not contain suitable habitat or critical habitat for the Mexican spotted owl and any indirect impacts would be considered insignificant and discountable.

4.2 Yellow-Billed Cuckoo and Southwestern Willow Flycatcher

Suitable yellow-billed cuckoo and southwestern willow flycatcher habitat consists of lowland large space riparian areas with dense cottonwood trees, willows, and other riparian shrubs exists within the Action Area. Both species are known to occur in areas along the Green River in Grand and Emery Counties. There have been no known occurrences of the species within one mile of the project site based on information provided by the UDWR. Although there are no known occurrences of either species in the

Action Area, suitable migration habitat is present and they have the possibility to be present during certain times of the year.

4.2.1 Direct Impacts

The project would require permanent clearing and grubbing of approximately 0.5 acres of land on the east and west bank of the river for improvements to the structure. Large scale removal of riparian vegetation, mainly willow and cottonwood galleries, will not be performed during the implementation of the proposed project. Based on the proposed limited disturbance to riparian areas surrounding the sites, the timing of construction activities and the very low likelihood of both species presence during those activities, direct impacts are expected to be insignificant and discountable to the yellow-billed cuckoo and the southwestern willow flycatcher.

The project site would be enhanced with willow and cottonwood plantings to stabilize and provide wildlife habitat over the long-term of the project resulting in a beneficial impact to the species. Removal of invasive species, such as tamarisk, would also allow native willows and cottonwoods to reestablish within the active floodplain increasing the likelihood of the species to utilize this area as nesting habitat.

Critical habitat for the southwestern willow flycatcher is not located in the Action Area and the project will not have an impact to the southwestern willow flycatcher critical habitat. The project will have minor impacts to insect prey populations that are insignificant and discountable.

4.2.2 Indirect Impacts

Significant habitat degradation has been caused by the invasion of tamarisk in the floodplain area adjacent to the Green River. Tamarisk changes riparian forests by destroying community structure, replacing three or four vegetation layers with one monotypic layer. Human disturbance of riparian habitats (e.g. damming and flow alteration, urbanization) has allowed tamarisk to outcompete native vegetation. Construction activities would disturb the area surrounding the project site. This disturbance will be revegetated with native plants and grasses but it also increases the risk of invasive species to establish.

Invasive species establishment typically coincides with reduction or loss of bird habitat, specifically cottonwood-willow habitat and as a result could lead to a decline in suitable habitat for the species. The project could indirectly impact the species by increasing the probability for invasive species to establish and reducing available habitat over the long-term of the project; however, the site will be stabilized upon project completion and monitored and any indirect impacts would be considered insignificant and discountable.

4.3 Colorado Pikeminnow, Razorback Sucker, Bonytail Chub, and Humpback Chub

The Colorado pikeminnow, razorback sucker, bonytail chub, and humpback chub are present within the Action Area. Based on information provided by the USFWS and UDWR, all four fish species have been captured and observed within the project Action Area in recent years. Critical habitat for the Colorado pikeminnow and razorback sucker was designated 1994 and is also located within the Action Area. Critical habitat for the bonytail and humpback chub exists downstream within the larger Action Area considered for water usage.

4.3.1 Direct Impacts

Direct impacts to all four fish species consist of critical and suitable habitat disturbance via armoring of the new diversion structure with riprap. Due to the permanent riprap placement within the river, the actions will result in a long-term loss of critical and/or suitable habitat that may adversely affect the all four fish species.

The use of temporary non-earthen cofferdams will dewater portions of the stream bottom in sections of the river and result in a temporary impact to critical habitat during construction. Flows in the active channel will be increased during construction around the cofferdam as the result of channel width reduction. Construction will occur during low flow periods and scouring of the channel will be at its lowest potential. Fish injury may occur if individual fish are struck by equipment or debris during placement of the cofferdams or in-stream structures. During the fish clearance and dewatering process, it is possible that some fish may be injured by the dewatering or stranded in remaining pools of water. All of these construction-related impacts will be short term in duration and these temporary measures will be removed at the end of the project. Conservation measures identified in Section 2.3.1 will be implemented to reduce the risk of fish injury during construction.

The proposed action would disturb the substrate creating minor turbid water conditions that would flow downstream. Silt curtains would be installed around work areas to minimize turbidity and sediment mobilization during construction. The sediment is expected to settle out in the river within several hundred feet and any direct impacts to fish or fish habitat from sediment laden water would be temporary and have a negligible impact.

Primary Constituent Elements (PCE's)

The following PCE's have been identified for the Colorado pikeminnow and Razorback sucker critical habitat (59 FR 13374 13400):

- **Water:** a sufficient quantity and quality of water (i.e., temperature, dissolved oxygen, contaminants, nutrients, turbidity, etc.) that is delivered to a specific location in accordance with a hydrologic regime that is identified for the particular life stage.
- **Physical Habitat:** This includes areas of the Colorado River system that are inhabited or potentially habitable by fish for use in spawning, nursery, feeding, and rearing, or corridors between these areas. In addition to river channels, these areas also include bottom lands, side channels, secondary channels, oxbows, backwaters, and other areas in the 100-year flood plain, which when inundated provide spawning, nursery, feeding and rearing habitats, or access to these habitats
- **Biological Environment:** Food supply, predation, and competition are important elements of the biological environment and are considered components of this constituent element.

The project involves existing **water** depletion of 819 cfs at the diversion structure in the form of an existing hydropower plant and irrigation water users. Water depletions in the Green River Basin reduce habitat quantity and quality. This Project constitutes an historic water depletion in the Green River Basin by using water for agricultural and hydropower purposes. Because the water use facilitated by this project began operation before January 22, 1988, the continued use of this water is considered a 'historic' depletion under the Recovery Program's Section 7 Agreement. The Recovery Program activities serve as conservation measures to offset the depletion impacts of historic projects. This diversion structure facilitates the water use of 59,000 acre-feet per year, of which no portion is considered a new depletion. As such, no depletion fee is required. If new water depletions are developed after the

completion of this diversion structure, those water projects would require an independent consultation and may be subject to the depletion fee, following standard Recovery Program guidelines.

There would be a loss of **physical habitat** which may likely adversely affect Colorado pikeminnow and Razorback sucker critical habitat from the expansion of the diversion structure. Beneficial impacts to physical habitat would include greater frequencies of upstream access to suitable habitat through the installation of the upstream fish passage and safe downstream passage through the notches. PIT tag detectors would also help the USFWS and UDWR to track species populations and movement within the Green River system to help manage populations and promote the recovery of the species.

The project would have a negligible impact on **biological environment** PCE's.

4.3.2 Indirect Impacts

The project action would temporarily impact Colorado pikeminnow and Razorback sucker indirectly from vibration. This construction-related impact would be short term in duration and temporary measures will be removed at the end of the project.

4.4 Interdependent and Interrelated Action Effects

This project is not part of a larger action, nor are any other actions dependent upon this project. Thus, there will be no interrelated or interdependent effects of the project.

4.5 Effects from Ongoing Project Activities

There will be no ongoing project activities from the project site upon completion. Thus, there will be no effects from ongoing project activities.

4.6 Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving federal activities, which are reasonably certain to occur within the project area.

There are other river and floodplain alteration activities within the Green River system that could potentially impact ESA listed species and are not part of this EWP project. Private landowners and local towns have initiated armoring their banks to protect against flood events without federal financial assistance. Armoring banks changes the geomorphology of a waterway and may change where the lower portions of the river scour and deposit sediment. The alteration of the geomorphology of the waterway may be determined by how much armoring is installed on the river. However, the amount of armoring being installed by private landowners and small municipalities is so small that the cumulative impacts are considered insignificant and discountable and may affect ESA listed species but is not likely to adversely affect.

Private landowners may also disturb oxbow wetlands and/or suitable habitat for agriculture practices without acquiring necessary permits or adhering to conservation and minimization measures. These are ongoing activities that have not been evaluated for their effects on ESA listed species but likely have impacts to species and its habitat. Agricultural practices have also introduced excess nitrogen and

phosphorous into the river system from fertilizer and agricultural runoff over the past 100 years. Impacts from the introduction of excess nitrogen and phosphorous into the rivers has not been quantified but may result in changes to the water and soil chemistry within the river and riparian areas resulting in potential impacts to critical and suitable habitat for ESA listed species or the species themselves.

4.6.1 Past, Present, and Reasonably Foreseeable Future Actions

It is difficult to predict the frequency of flood events in the Green River that could cause damage warranting repair or additional protection measures. The EWP program was specifically established to repair damage that occurred during flood events. Since this river periodically floods and flood repair activities such as this project are likely to occur in the future in this watershed, additional EWP actions may be warranted in the future. Impacts to ESA listed species would be analyzed at that time if they are funded by the EWP program.

The Gunnison Butte Irrigation and Eastside High Ditch Project is located south of the project area, between the diversion structure and the city of Green River. The project plans include the diversion of water directly out of the Green River to irrigate about 5,000 acres of new lands that they currently own or have leased, and about 1,500 acres of supplemental irrigation. This would supply established markets with melons, corn, alfalfa, sod and various row crops.

The Upper Colorado River Endangered Fish Recovery Program, through funding from the BOR and technical oversight from the USFWS, is working on a fish exclusion system focused on reducing entrainment and to prevent ESA listed fish and other fish species from entering the Green River Canal. The program and project team are working with the Green River Canal Company and Thayn Hydropower to look at a solution downstream of the Thayn Power Plant in the Green River Canal. The project requires a 50 cfs fish return flow and additional head created from the diversion structure.

The City of Green River, through the National Park Service, Rivers, Trails, and Conservation Assistance (RTCA) Program, which provides planning assistance to cities and counties throughout Utah, is overseeing a new study to establish a trail system that would connect residents and tourists to natural, historic, and modern landmarks, highlight recreational areas, promote health awareness, and seek to establish the first water trail in Utah. The future trail system would expand and promote access to the Green River and connect rural assets surrounding the town. This would be done by establishing trails running along the riverbank and throughout town, promoting access to the river and trail through new signage, and develop the first water trail in Utah.

Trout Unlimited has goals for the Green River, including obtaining a national listing as a Wild and Scenic River.

The Blue Castle site is located about five miles west-northwest of Green River, Utah in Emery County. Currently this new nuclear power plant is in the licensing phase, which would require significant data collection and analysis spanning five years with costs in the tens of millions.

4.6.2 Mexican Spotted Owl

The Green River Diversion Rehabilitation would not lead to negative cumulative impacts for the Mexican spotted owl because the project Action Area is not located within the species critical habitat and does not contain suitable breeding/roosting habitat.

4.6.3 Yellow-Billed Cuckoo and Southwestern Willow Flycatcher

The Green River Diversion Rehabilitation would permanently remove approximately 0.5 acres of Yellow-billed cuckoo and Southwestern willow flycatcher suitable habitat. Approximately 7.8 acres of ground would be temporarily disturbed for access and staging which will be restored after completion of construction activities using native plant species. Large scale removal of riparian vegetation, mainly willow and cottonwood galleries, will not be performed during the implementation of the proposed project. Based on the proposed limited disturbance to areas surrounding the project site, the cumulative impacts are considered insignificant and discountable.

4.6.4 Colorado Pikeminnow, Razorback Sucker, Bonytail Chub, and Humpback Chub

The Green River Diversion Rehabilitation would have a major beneficial cumulative effect to the proposed project area in relation to fish passage. The fish barrier proposed downstream of the west raceway would provide a beneficial cumulative effect to ESA listed fish species in the area through an effort to reduce mortality and increase migration through the project area.

SECTION 5

CONCLUSION

5.1 Determination of Effect

The following effect determinations have been made for the seven ESA listed species analyzed in this BA:

- Mexican spotted owl: **May Affect, Not Likely to Adversely Affect**
- Mexican spotted owl Critical Habitat: **No Effect**
- Yellow-billed cuckoo: **Will Not Jeopardize the Continued Existence**
- Southwestern willow flycatcher: **May Affect, Not Likely to Adversely Affect**
- Southwestern willow flycatcher Critical Habitat: **No Effect**
- Colorado pikeminnow: **May Affect, Likely to Adversely**
- Colorado pikeminnow Critical Habitat: **May Affect, Likely to Adversely Affect**
- Razorback sucker: **May Affect, Likely to Adversely Affect**
- Razorback sucker Critical Habitat: **May Affect, Likely to Adversely Affect**
- Bonytail chub: **May Affect, Likely to Adversely Affect**
- Bonytail chub Critical Habitat: **May Affect, Likely to Adversely Affect**
- Humpback chub: **May Affect, Likely to Adversely Affect**
- Humpback chub Critical Habitat: **May Affect, Likely to Adversely Affect**

The proposed action would have No Effect on any other ESA listed species identified in the USFWS Grand and Emery Counties species lists.

5.2 Conclusion

The NRCS has prepared this BA to comply with Section 7 of the ESA for the Green River Diversion Rehabilitation. The USFWS has regulatory jurisdiction over any activities that may harm Mexican spotted owl, yellow-billed cuckoo, southwestern willow flycatcher, Colorado pikeminnow, razorback sucker, bonytail chub and humpback chub. NRCS is requesting USFWS concurrence with this BA and review of this project so that the project may be implemented after the fish spawning season in fall 2014.

Because Colorado pikeminnow, razorback sucker, bonytail chub and humpback chub are present or have the potential to be present within the action area and more specifically in the disturbed project area, the species is likely to be adversely affected based on the preliminary estimates provided in this BA.

SECTION 6

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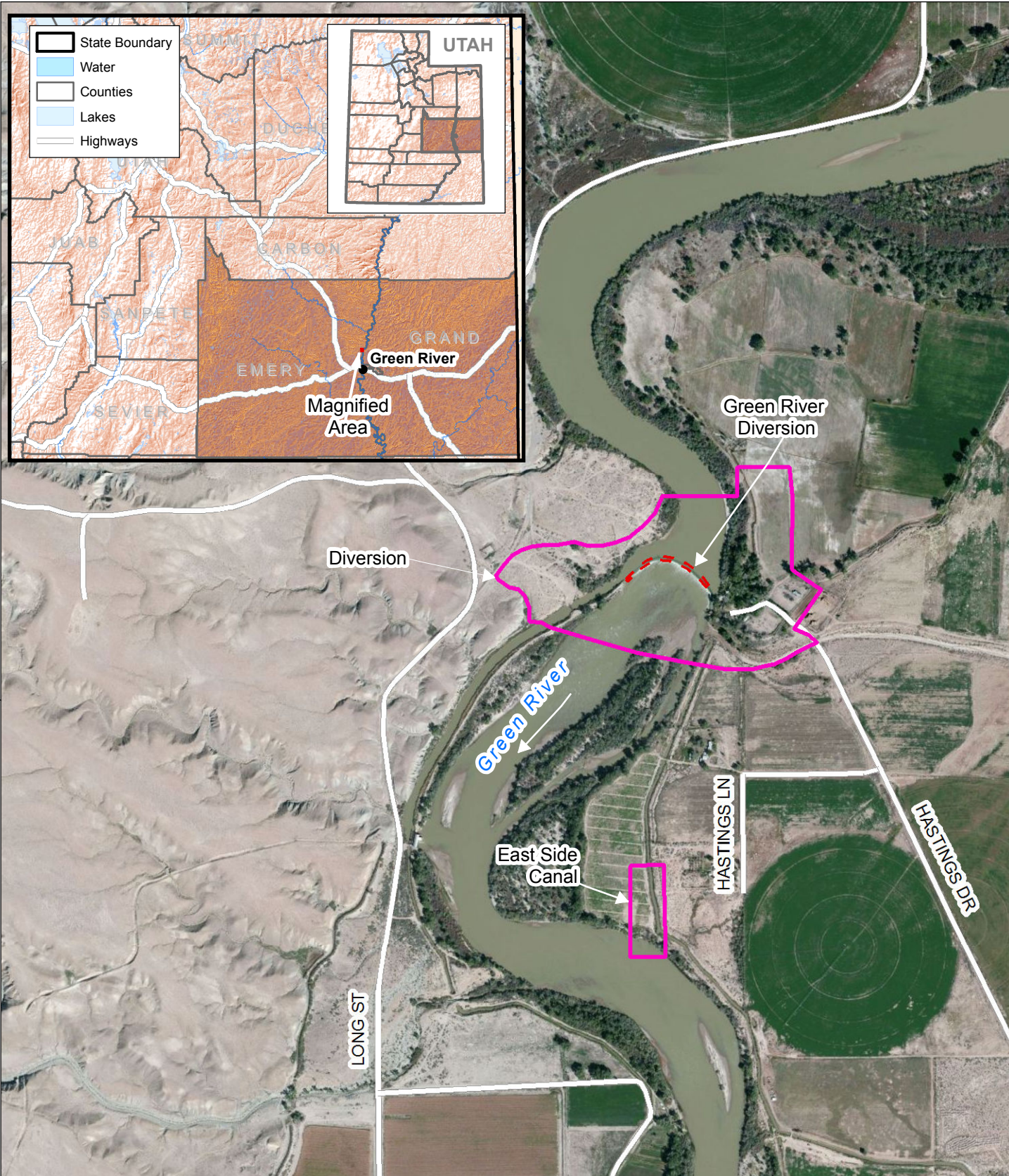
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MAPS



Map 1: Vicinity Map

NRCS Green River Diversion Rehabilitation

0 500 1,000 2,000 Feet



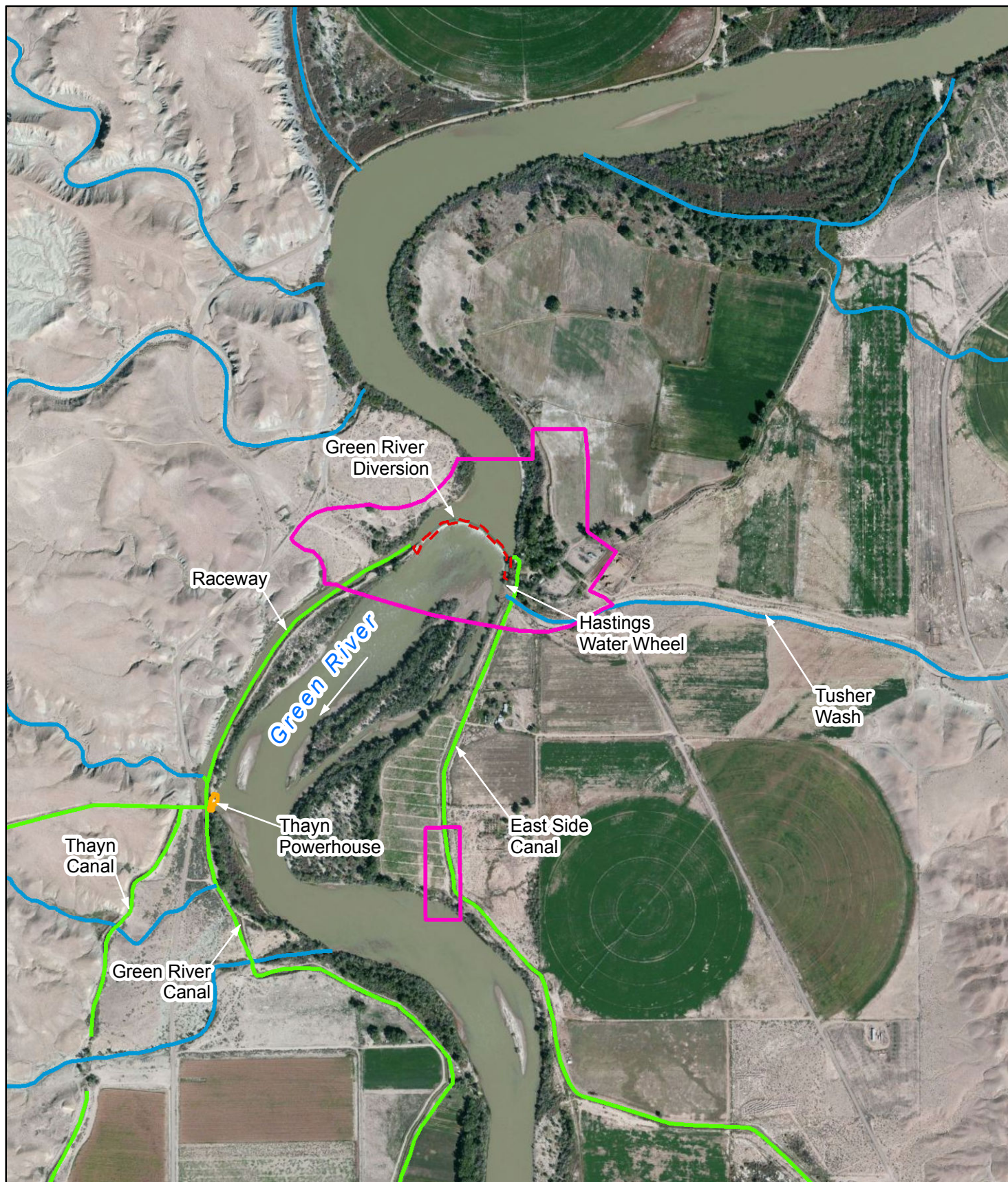
McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.



Legend

- Project Area
- Roads
- Green River Diversion Dam

NOTES:
Aerial photo from Bing imagery service. Capture date September 2010, Shaded reliefs derived from 10-m and 90-m USGS DEMs. Points, lines and polygons supplied by various state and federal sources,



Map 2: Project Area Map

NRCS Green River Diversion Rehabilitation

0 500 1,000 2,000 Feet

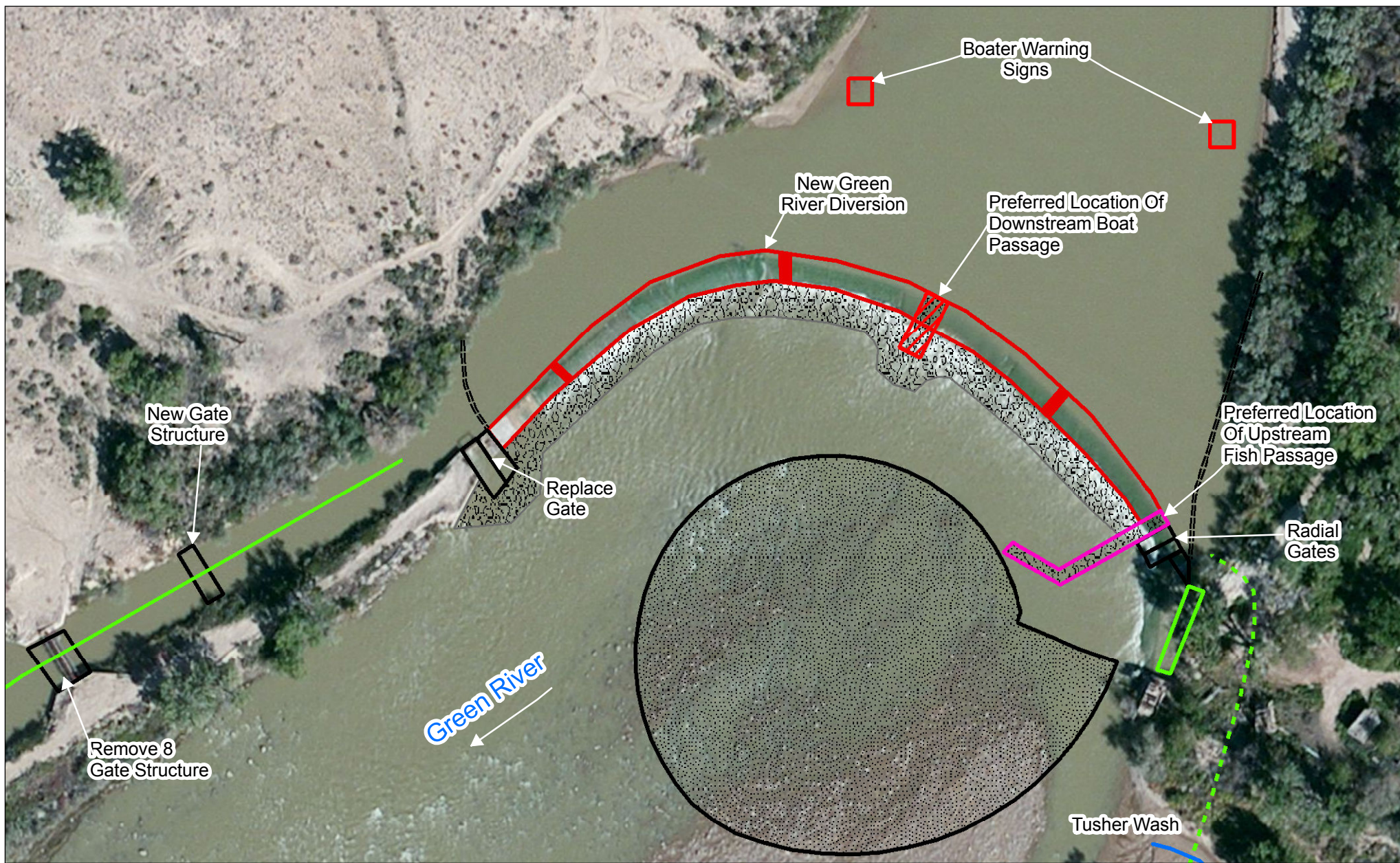
McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.



Legend

- Thayn Powerhouse
- Green River Diversion Dam
- Project Area
- Stream
- Canal

NOTES:
Aerial photo from Bing imagery service. Capture date September 2010. Points, lines and polygons supplied by various state and federal sources, including BLM, UDOT, and USGS.



Map 3: Proposed Project Action

NRCS Green River Diversion Rehabilitation

0 50 100 200 Feet

Legend

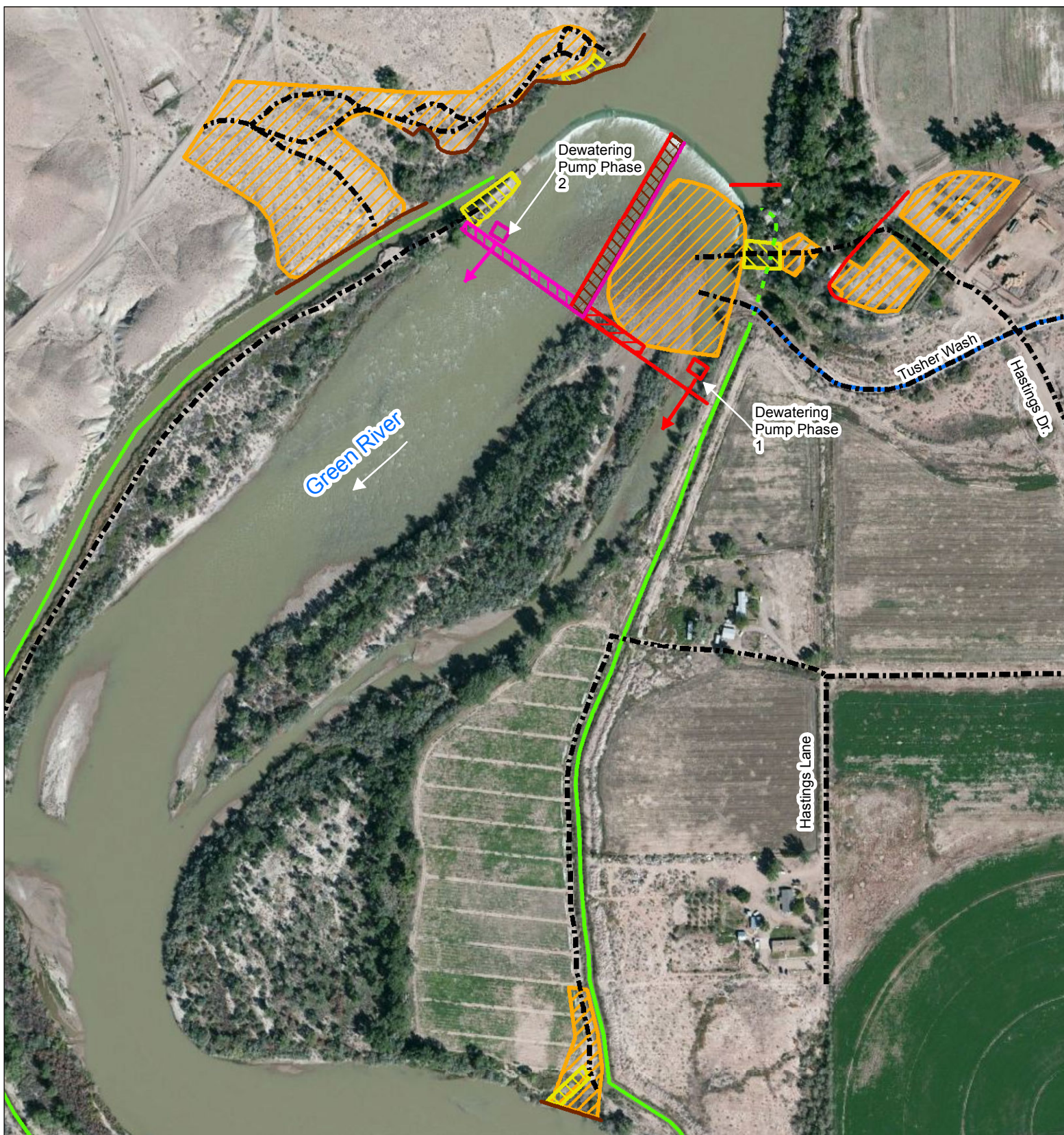
- === Log Boom
- Canal
- Stream
- ▨ Boat Passage
- ▨ Fish Passage Notches
- - - Subsurface Canal
- ▨ Water Wheel Raceway
- ▨ Riprap
- ▨ "Proposed" Sediment Removal (2.5 acres/1,100 Cu. Yards)
- ▨ New Gate
- ▨ Upstream Fish Passage



NOTES:
Aerial photo from Bing imagery service. Capture date September 2010. Water Rights diversion data from Utah Division of Water Rights(2013). Stream layer from AGRC, based on National Hydrography Dataset. Plan features are approximated and not to scale or defined as final plan.



McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.



Map 4: Staging, Access and ESC (Proposed Project Action)

NRCS Green River Diversion Rehabilitation

0 150 300 600 Feet



McMILLEN, LLC
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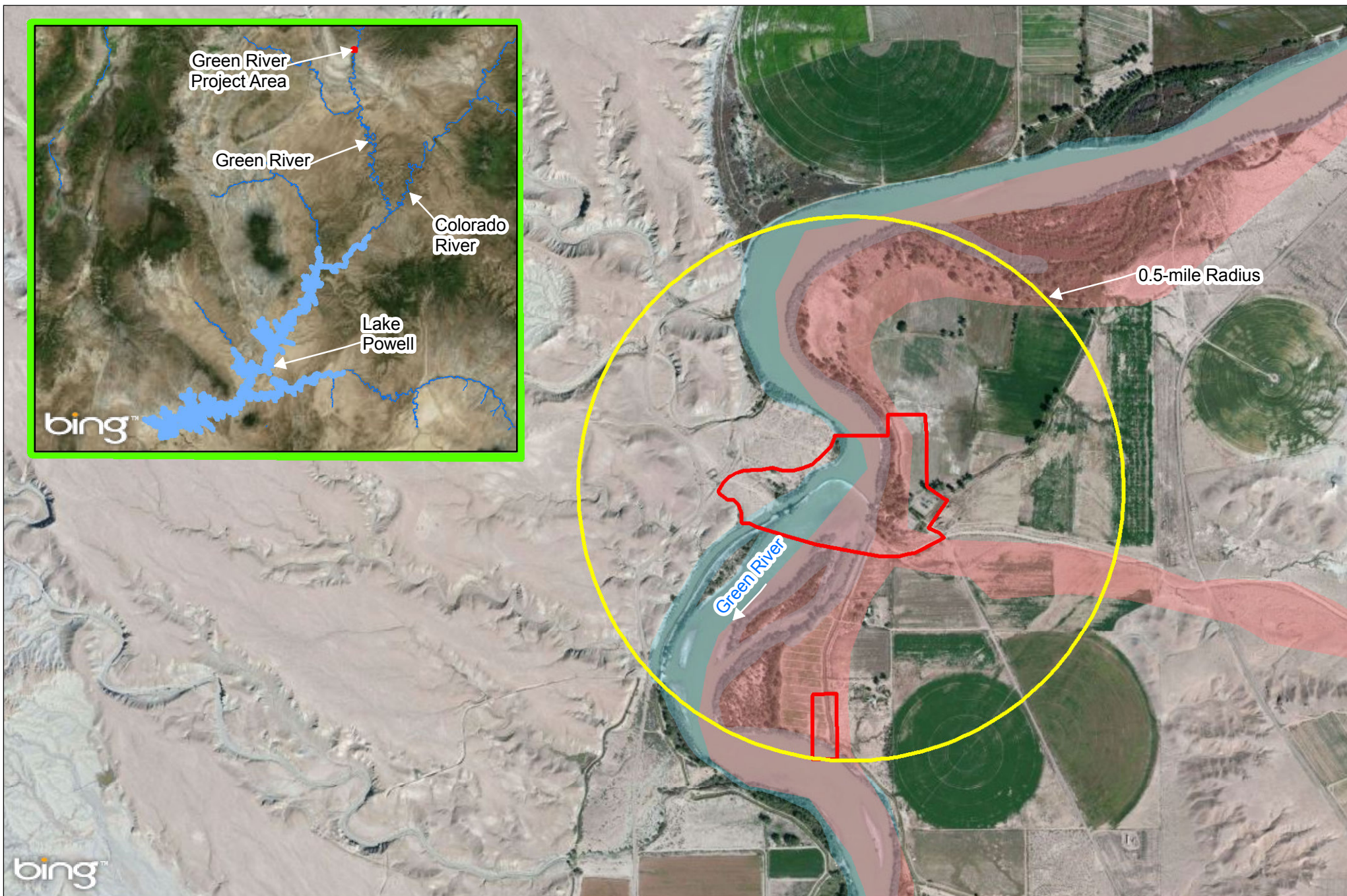


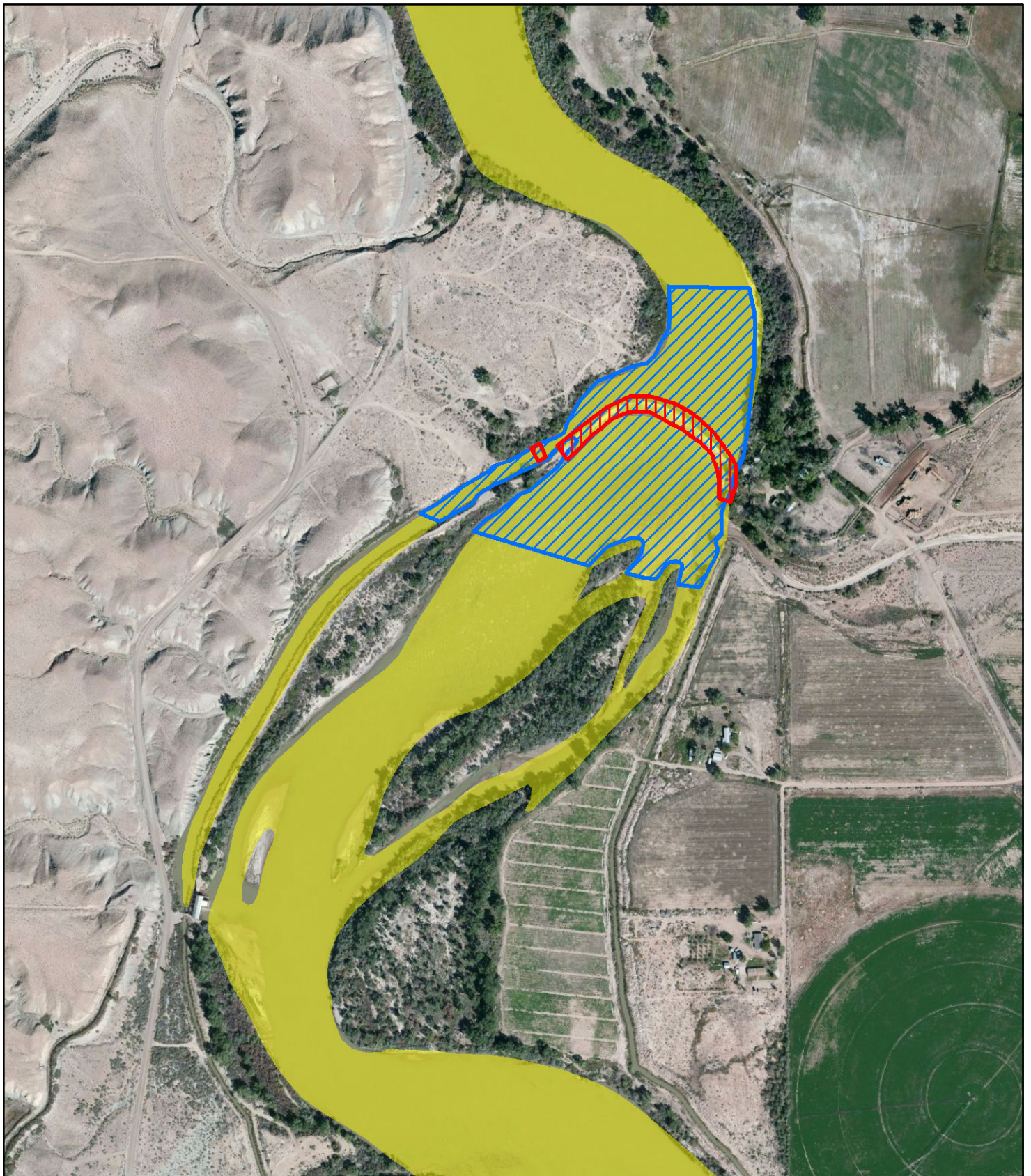
Legend

- | | | |
|----------------|-------------------|-------------------------------|
| Staging | Access Road | Dewatering Berm Phase 1 |
| Canal | ESC Phase 1 | Dewatering Berm Phase 2 |
| Stream | ESC Phase 2 | Dewatering Berm Phase 1 and 2 |
| Clear and Grub | ESC Phase 1 and 2 | |

NOTES:

Aerial photo from Bing imagery service. Capture date September 2010. Water Rights diversion data from Utah Division of Water Rights(2013). Stream layer from AGRC, based on National Hydrography Dataset. Plan features are approximated and not to scale or defined as final plan.





Map 6: Impacts to Endangered & Threatened Fish Species & Critical Habitat




NRCS Green River Diversion Rehabilitation

0 300 600 1,200 Feet

McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.



Legend

-  Permanent Impacts to Critical Habitat (1.37 acres)
-  Temporary Impacts to Critical Habitat (14.57 acres)
-  Colorado Pikeminnow & Razorback Sucker Critical Habitat

NOTES:

Aerial photo from Bing imagery service. Capture date September 2010. Points, lines and polygons supplied by various state and federal sources, including USFWS, BLM, UDOT, and USGS.

APPENDIX A

SPECIES LIST

USFWS Emery County Listed and Candidate Species List Accessed March 25, 2014

Group	Name	Population	Status	Lead Office	Recovery Plan Name	Recovery Plan Stage
Birds	California condor (<i>Gymnogyps</i>	U.S.A. (specific portions of	Experimental Population, Non-	Office Of The Regional Director		
Birds	Yellow-billed Cuckoo (<i>Coccyzus</i>	Western U.S. DPS	Proposed Threatened	Sacramento Fish And Wildlife		
Birds	Greater sage-grouse	entire	Candidate	Wyoming Ecological Services		
Birds	Mexican spotted owl (<i>Strix</i>	Entire	Threatened	Arizona Ecological Services	Final Recovery Plan for the	Final Revision 1
Birds	Southwestern willow flycatcher	Entire	Endangered	Arizona Ecological Services	Final Recovery Plan for the	Final
Fishes	Humpback chub (<i>Gila cypha</i>)	Entire	Endangered	Upper Colorado River	Humpback Chub - 1990 2nd	Final Revision 2
Fishes	Colorado pikeminnow	except Salt and Verde R.	Endangered	Upper Colorado River	Colorado Pikeminnow	Final Revision 2
Fishes	Bonytail chub (<i>Gila elegans</i>)	Entire	Endangered	Upper Colorado River	Bonytail Chub Revised	Final Revision 1
Fishes	Razorback sucker (<i>Xyrauchen</i>	Entire	Endangered	Upper Colorado River	Razorback Sucker - Recovery	Final Revision 1
Flowering Plants	Jones Cycladenia (<i>Cycladenia</i>		Threatened	Utah Ecological Services Field	Recovery Outline for the Jones	Outline
Flowering Plants	Maguire daisy (<i>Erigeron</i>		Recovery	Utah Ecological Services Field	Maguire Daisy (<i>Erigeron</i>	Final
Flowering Plants	Wright fishhook cactus		Endangered	Utah Ecological Services Field	Wright Fishhook Cactus	Final
Flowering Plants	Last Chance townsendia		Threatened	Utah Ecological Services Field	Last Chance Townsendia	Final
Flowering Plants	San Rafael cactus (<i>Pediocactus</i>		Endangered	Utah Ecological Services Field	Public and Agency Review Draft	Draft
Flowering Plants	San Rafael cactus (<i>Pediocactus</i>		Endangered	Utah Ecological Services Field	Recovery Outline for San Rafael	Outline
Flowering Plants	Winkler cactus (<i>Pediocactus</i>		Threatened	Utah Ecological Services Field	Recovery Outline for San Rafael	Outline
Flowering Plants	Winkler cactus (<i>Pediocactus</i>		Threatened	Utah Ecological Services Field	Public and Agency Review Draft	Draft
Flowering Plants	Barneby reed-mustard		Endangered	Utah Ecological Services Field	Utah Reed-Mustards (3 spp.)	Final

USFWS Grand County Listed and Candidate Species List Accessed March 25, 2014

Group	Name	Population	Status	Lead Office	Recovery Plan Name	Recovery Plan Stage
Birds	California condor (<i>Gymnogyps</i>	U.S.A. (specific portions of	Experimental Population, Non-	Office Of The Regional Director		
Birds	Yellow-billed Cuckoo (<i>Coccyzus</i>	Western U.S. DPS	Proposed Threatened	Sacramento Fish And Wildlife		
Birds	Greater sage-grouse	entire	Candidate	Wyoming Ecological Services		
Birds	Mexican spotted owl (<i>Strix</i>	Entire	Threatened	Arizona Ecological Services	Final Recovery Plan for the	Final Revision 1
Birds	Southwestern willow flycatcher	Entire	Endangered	Arizona Ecological Services	Final Recovery Plan for the	Final
Fishes	Humpback chub (<i>Gila cypha</i>)	Entire	Endangered	Upper Colorado River	Humpback Chub - 1990 2nd	Final Revision 2
Fishes	Colorado pikeminnow	except Salt and Verde R.	Endangered	Upper Colorado River	Colorado Pikeminnow	Final Revision 2
Fishes	Bonytail chub (<i>Gila elegans</i>)	Entire	Endangered	Upper Colorado River	Bonytail Chub Revised	Final Revision 1
Fishes	Razorback sucker (<i>Xyrauchen</i>	Entire	Endangered	Upper Colorado River	Razorback Sucker - Recovery	Final Revision 1
Flowering Plants	Jones Cycladenia (<i>Cycladenia</i>		Threatened	Utah Ecological Services Field	Recovery Outline for the Jones	Outline



U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

Utah Ecological Services Field Office
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UT 84119
(801) 975-3330
<http://www.fws.gov>
<http://www.fws.gov/utahfieldoffice/>

Project Name:

Green River Diversion Rehabilitation



U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Location Map:



Project Counties:

Emery, UT | Grand, UT

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-110.1392211 39.0822614, -110.1399066 39.0789476, -110.1398637 39.0789476, -110.1436188 39.0748998, -110.1474812 39.0746832, -110.1475895 39.0762316, -110.1464952 39.0788143, -110.1408089 39.0825779, -110.1392211 39.0822614)))

Project Type:

Dam



Natural Resources of Concern

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **10** threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Birds	Status		Has Critical Habitat	Contact
Greater sage-grouse (<i>Centrocercus urophasianus</i>) Population: entire	Candidate	species info		Utah Ecological Services Field Office
Mexican Spotted owl (<i>Strix occidentalis lucida</i>) Population: Entire	Threatened	species info	Final designated critical habitat	Utah Ecological Services Field Office
Southwestern Willow flycatcher (<i>Empidonax traillii extimus</i>) Population: Entire	Endangered	species info	Final designated critical habitat	Utah Ecological Services Field Office
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) Population: Western U.S. DPS	Proposed Threatened	species info		Utah Ecological Services Field Office
Fishes				
Bonytail chub (<i>Gila elegans</i>) Population: Entire	Endangered	species info	Final designated critical habitat	Utah Ecological Services Field Office
Colorado pikeminnow (<i>Ptychocheilus lucius</i>) Population: except Salt and Verde R. drainages, AZ	Endangered	species info	Final designated critical habitat	Utah Ecological Services Field Office



Natural Resources of Concern

Humpback chub (<i>Gila cypha</i>) Population: Entire	Endangered	species info	Final designated critical habitat	Utah Ecological Services Field Office
Razorback sucker (<i>Xyrauchen texanus</i>) Population: Entire	Endangered	species info	Final designated critical habitat	Utah Ecological Services Field Office
Flowering Plants				
Barneby reed-mustard (<i>Schoenocrambe barnebyi</i>)	Endangered	species info		Utah Ecological Services Field Office
Jones Cycladenia (<i>Cycladenia humilis</i> var. <i>jonesii</i>)	Threatened	species info		Utah Ecological Services Field Office

Critical habitats within your project area: [\(View all critical habitats within your project area on one map\)](#)

The following critical habitats lie fully or partially within your project area.

Fishes	Critical Habitat Type
Colorado pikeminnow (<i>Ptychocheilus lucius</i>) Population: except Salt and Verde R. drainages, AZ	Final designated critical habitat
Razorback sucker (<i>Xyrauchen texanus</i>) Population: Entire	Final designated critical habitat

FWS National Wildlife Refuges ([USFWS National Wildlife Refuges Program](#)).

There are no refuges found within the vicinity of your project.



U.S. Fish and Wildlife Service

Natural Resources of Concern

FWS Migratory Birds ([USFWS Migratory Bird Program](#)).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the [Bald and Golden Eagle Protection Act](#) (16 U.S.C. 668). The Service's [Birds of Conservation Concern \(2008\)](#) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

Migratory bird information is not available for your project location.

NWI Wetlands ([USFWS National Wetlands Inventory](#)).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

IPaC is unable to display wetland information at this time.

APPENDIX B

PHOTOGRAPHS



Photograph 1 – 08/20/2012

Standing on the E side of the diversion looking NW across the diversion structure.



Photograph 2 – 08/20/2012

Standing on the E side of the diversion looking N-NW across the Green River above the diversion structure.



Photograph 3 – 08/20/2012

Standing on the W side of the diversion looking E across the diversion structure.



Photograph 4 – 08/20/2012

Standing on the W side of the diversion looking SW across the Green river below the diversion structure



Photograph 5 – 08/20/2012
Standing in the Tusher Wash looking NW toward the Green River
along Tusher Wash alignment.



Photograph 7 – 08/20/2012
Standing on raceway gate structure looking SW along the raceway.



Photograph 6 – 08/20/2012
Standing on the W side of the diversion structure looking SW along
the raceway. Raceway gate structure in background.



Photograph 8 – 08/20/2012
Standing at Thayn Powerhouse looking N along the raceway.
Powerhouse on right of photo.



Photograph 9 – 08/20/2012
Standing at Thayn Powerhouse looking NE along the Green River
toward the diversion structure.



Photograph 10 – 11/15/2012
Standing on the E riverbank looking N at Hastings water wheel.

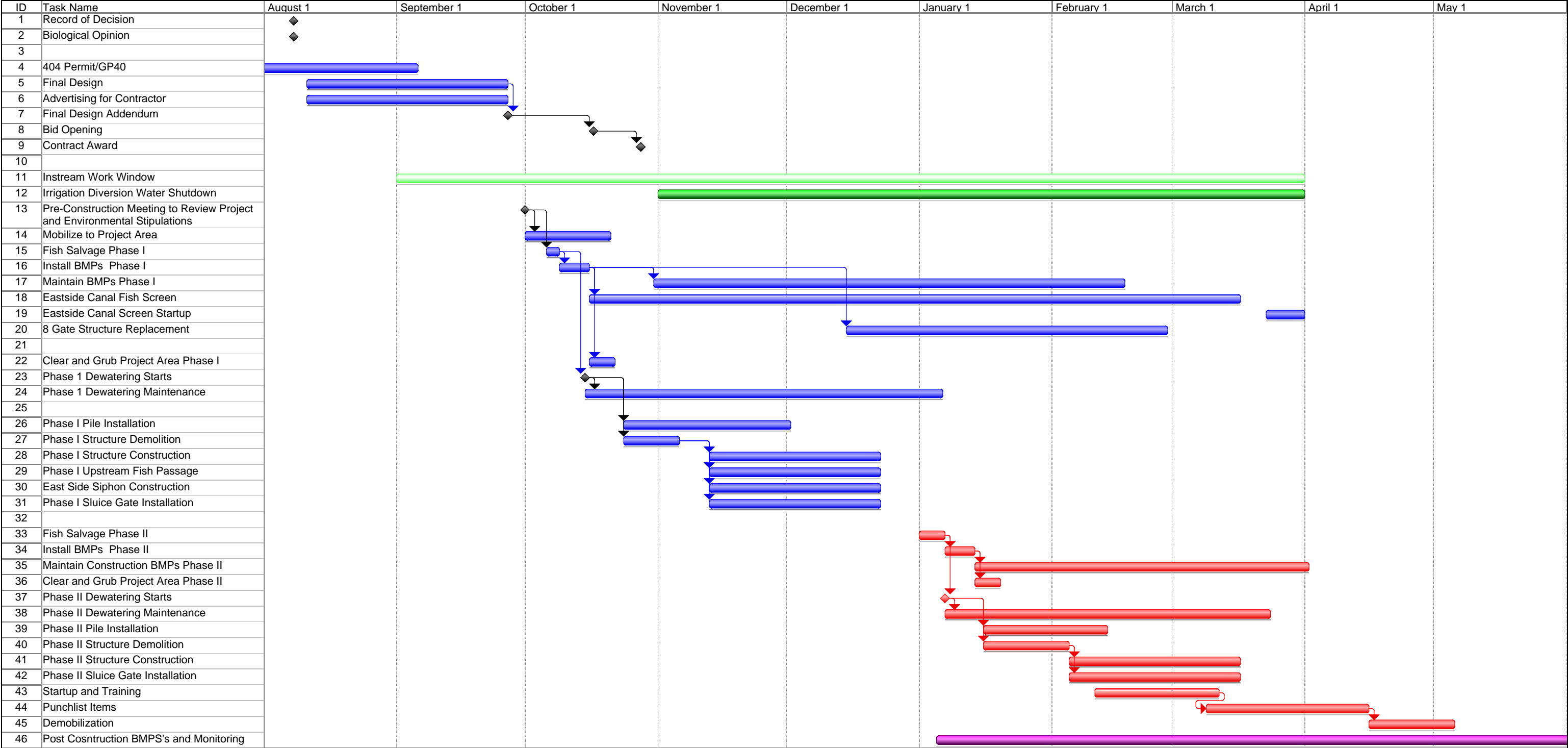


Photograph 11 – 11/15/2012
Standing at Hastings water wheel looking W across the Green
River.

APPENDIX C

SUPPORTING DOCUMENTATION

Projected Green River Construction Schedule



Project: Construction Schedule_2007
Date: Fri 5/30/14

Task
Split



Milestone
Summary



Project Summary
External Tasks



External Milestone
Progress



Deadline



STANDARD BMPS FOR IN-CHANNEL CONSTRUCTION ACTIVITIES

1. Time construction activity to occur during periods of low flows and to avoid periods when aquatic life are most vulnerable (e.g. spawning). Consult with Utah Division of Wildlife Resources to determine appropriate times for construction.
2. Minimize the length of time that construction occurs. Consolidate channel work and complete the installation without interruption. Avoid conducting concurrent site activities that may delay channel work and increase time of disturbance.
3. Conduct the construction activity in phases. Avoid area-wide clearance of the construction site. Disturb areas in small parcels and stabilize them before proceeding with the next phase.
 - a. Sequence construction activities so that the soil is not exposed for long periods of time.
 - b. Schedule or limit grading to small areas.
 - c. Install key sediment control practices before site grading begins.
 - d. Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contour.
4. Minimize disturbance in the channel by conducting only essential work in stream area. Conduct staging activities, material/equipment storage, equipment servicing, and excavated material placement well away from the stream. Use physical markers (flagging, stakes) to delineate area to be disturbed.
 - a. Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway.
 - b. Make sure that the construction entrance does not become buried in soil.
 - c. Properly site entrance BMPs for all anticipated vehicles.
 - d. Use offsite fueling stations as much as possible, or dedicated fueling areas onsite.
 - e. Discourage “topping-off” of fuel tanks.
 - f. Dedicated fueling areas should be level, and in consideration of downstream drainage facilities and watercourses.
 - g. Protect fueling areas with berms and dikes to prevent runoff, run-off, and to contain spills.
 - h. Use vapor recovery nozzles with automatic shutoffs to control drips as well as air pollution.
5. Protect existing vegetation except where removal is essential for work completion.
 - a. Minimize clearing and the amount of exposed soil.
 - b. Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity.
 - c. Protect streams, stream barriers, wild wood lands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.
6. Dispose of excess material (excavated, debris, vegetation) out of the stream channel/floodplain.
7. Prevent wet cement from entering the water. Cement is highly toxic to aquatic organisms. Ensure that all concrete used during construction is set before allowing contact with streamflow. Wash equipment used during concrete work well away from the stream channel/floodplain and tributaries.
8. Control runoff from disturbed areas using runoff control measures.
 - a. Inspect and maintain silt fences after each storm.
 - b. Make sure the bottom of the silt fence is buried.

- c. Securely attach the material to the stakes.
 - d. Don't place silt fences in the middle of a waterway or use them as a check dam.
 - e. Stormwater should not flow around the silt fence.
9. Install temporary sediment control measures prior to initiating construction in the stream channel/floodplain.
- a. Silt Fence
 - b. Desilting Basin
 - c. Sediment Trap
 - d. Check Dam
 - e. Fiber Rolls
10. Completely remove all structures/temporary controls from the site at the end of the construction activity. Remove and dispose sediment accumulated in temporary sediment controls away from the stream environment or redistribute and stabilize as topsoil.
11. Immediately install permanent stabilization controls for disturbed areas following construction. Some delays may be acceptable for seasonal timing of revegetation (seeding). Maintain temporary controls until the disturbed area is adequately stabilized.
- Vegetative Buffers
 - a. Protect and install vegetative buffers along waterbodies to slow and filter stormwater run-off.
 - b. Maintain buffers by mowing or replanting periodically to ensure their effectiveness.
 - Site Stabilization
 - a. Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed.
 - Temporary soil stabilization
 - a. Preservation of Existing Vegetation
 - b. Hydraulic Mulch
 - c. Hydroseeding
 - d. Straw Mulch
 - e. Geotextiles, Plastic Covers, Erosion Control Blankets, Mats
 - f. Earth Dikes, Drainage Swales and Ditches
 - g. Slope Drains

TECHNICAL MEMORANDUM

McMILLEN, LLC

To:	Bronson Smart, NRCS	Project:	Green River Diversion Rehabilitation EIS
From:	Aimee Hill McMillen, LLC	Cc:	File
Date:	February 2014		
Subject:	Species of Concern Memo		

1.0 INTRODUCTION

The USFWS Environmental Conservation Online System (ECOS) was accessed on March 25, 2014 to obtain a species list for Grand and Emery Counties. The USFWS Information, Planning, and Conservation System (IPaC) was also accessed on March 25, 2014 and a Preliminary Species List was obtained for the project area.

A Biological Assessment (BA) has been completed for the project and was submitted to the United States Fish and Wildlife Service (USFWS) in June 2014 to comply with Section 7 of the Endangered Species Act. Federally-listed species are documented fully in the BA.

California Condor and Greater sage-grouse were identified on the Grand and Emery County species list, but were not identified as species that should be considered in an effects analysis, according to the USFWS IPaC Preliminary Species List. The proposed project would have **No Effect** to California Condor or its critical habitat and based on additional research, habitat/critical habitat for the species does not exist within the immediate project area. The condor is generally known to have been identified in the Book Cliffs, which is within the vicinity of the project. It can be assumed then that if the species does use the cliffs for nesting, it may use the project area for foraging.

The proposed project would have **No Effect** to Greater sage-grouse or its critical habitat as it was not included in the USFWS IPaC Preliminary Species List and based on additional research habitat/critical habitat for the species does not exist within the project area. Table 1 below identifies threatened, endangered or candidate animal species identified in the USFWS IPaC Preliminary Species List or that should be considered in an effects analysis for the proposed project.

The State of Utah sensitive species list includes 34 sensitive animal species within Grand and Emery Counties (UCDC 2011). The Bureau of Land Management (BLM) sensitive species list for Utah includes 42 animal species (USDI-BLM 2012). A copy of the Utah and BLM sensitive species lists have been included in Appendix E. Information provided by Utah Division of Wildlife Resources (UDWR) identified known occurrences of 2 of the State-listed species (Colorado pikeminnow and razorback sucker) within one mile of the project site. These species are listed in Table 1 below. Additional species information has been included below the table which was obtained through the UDWR UCDC (UDWR 2014). The remaining BLM/State-listed sensitive species are not anticipated to occur in the project area due to lack of habitat or lack of known occurrence.

Table 1. Federal and State Listed Species in Emery and Grand Counties, Utah

Common Name	Scientific Name	Status	County	Likely to Occur in Study Area
Federally-Listed Species				
Bonytail chub*	<i>Gila elegans</i>	E	Emery, Grand	Yes
Colorado pikeminnow*	<i>Ptychocheilus lucius</i>	E	Emery, Grand	Yes
Humpback chub*	<i>Gila cypha</i>	E	Emery, Grand	Yes
Razorback sucker*	<i>Xyrauchen texanus</i>	E	Emery, Grand	Yes
Greater sage-grouse*	<i>Centrocercus urophasianus</i>	C	Emery, Grand	No
Mexican spotted owl*	<i>Strix occidentalis lucida</i>	T	Emery	Yes
Yellow-billed cuckoo*	<i>Coccyzus americanus</i>	Proposed T	Emery, Grand	Yes
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	Emery, Grand	Yes
State-Listed Species				
Allen's big-eared bat	<i>Idionycteris phyllotis</i>	SPC	Grand	No
American white pelican	<i>Pelecanus erythrorhynchos</i>	SPC	Grand	No
Bald eagle**	<i>Haliaeetus leucocephalus</i>	SPC	Emery, Grand	Yes
Big free-tailed bat	<i>Nyctinomops macrotis</i>	SPC	Grand	Yes
Bluehead sucker	<i>Catostomus discobolus</i>	CS	Emery, Grand	Yes
Burrowing owl	<i>Athene cunicularia</i>	SPC	Emery, Grand	Yes
Colorado River cutthroat trout	<i>Oncorhynchus clarkii pleuriticus</i>	CS	Emery	No
Cornsnake	<i>Elaphe guttata</i>	SPC	Emery, Grand	Yes
Eureka mountainsnail	<i>Oreohelix eurekaensis</i>	SPC	Grand	No
Ferruginous hawk	<i>Buteo regalis</i>	SPC	Emery, Grand	Yes
Flannelmouth sucker	<i>Catostomus latipinnis</i>	CS	Emery, Grand	Yes
Fringed myotis	<i>Myotis thysanodes</i>	SPC	Grand	No
Great plains toad	<i>Bufo cognatus</i>	SPC	Emery, Grand	Yes
Gunnison sage-grouse	<i>Centrocercus minimus</i>	SPC	Grand	No
Gunnison's prairie-dog	<i>Cynomys gunnisoni</i>	SPC	Grand	No
Kit fox	<i>Vulpes macrotis</i>	SPC	Emery, Grand	No
Lewis's woodpecker	<i>Melanerpes lewis</i>	SPC	Grand	No

Common Name	Scientific Name	Status	County	Likely to Occur in Study Area
Mountain plover	<i>Charadrius montanus</i>	SPC	Grand	No
Northern goshawk	<i>Accipiter gentilis</i>	CS	Emery, Grand	No
Roundtail chub	<i>Gila robusta</i>	CS	Emery, Grand	Yes
Smooth greensnake	<i>Opheodrys vernalis</i>	SPC	Grand	No
Spotted bat	<i>Euderma maculatum</i>	SPC	Grand	Yes
Three-toed woodpecker	<i>Picoides tridactylus</i>	SPC	Emery, Grand	No
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SPC	Emery, Grand	Yes
Western toad	<i>Bufo boreas</i>	SPC	Emery	No
White-tailed prairie-dog	<i>Cynomys leucurus</i>	SPC	Emery, Grand	Yes

* Also identified in the State-Listed Species list, E=Federally Endangered, T=Federally Threatened, C=Federal Candidate for Listing

Based on habitat conditions and species occurrences in the project area, seven Federally-listed species have been identified that are likely to occur or have been documented occur in the project area: Bonytail chub, Colorado pikeminnow, Humpback chub, Razorback sucker, Mexican spotted owl, Yellow-billed cuckoo and Southwestern willow flycatcher. See the BA in Appendix C of the EIS for additional species information.

Based on habitat conditions and species occurrences in the project area, 12 State/BLM-listed species have been identified that are likely to occur in the project area: bald eagle, big free-tailed bat, bluehead sucker, burrowing owl, cornsnake, ferruginous hawk, flannelmouth sucker, Great Plains toad, roundtail chub, spotted bat, Townsend's big-eared bat, and the white-tailed prairie dog.

Only the state-listed species that could potentially occur in the study area are discussed briefly here.

BALD EAGLE. Utah is home to one the largest state populations of wintering bald eagles, with more than 1,200 eagles counted in Utah in recent years (UDWR 2009b). According to UDWR, 25 to 30% of bald eagles wintering in the lower 48 states spend the winter in Utah, indicating the value of habitat in the state (UDWR 2009b). Wintering range includes the study area (UCDC 1999). During winter, bald eagles roost communally in sheltered stands of trees, typically selecting roosts near an open water body. Prior to 1980 there were no records of nesting bald eagles in Utah (CBD 2007). Since 1983, when the first pair successfully reproduced, Utah's breeding bald eagle population has grown to 11 pairs, recorded in 2007. The Center for Biological Diversity notes that breeding bald eagle pairs were known to be present in Emery and Grand counties. Breeding bald eagles prefer to establish nests in large conifer trees near open water, but will also select cliff faces or ground sites if available (Cornell Lab of Ornithology 2013). Clutches are typically 1 to 3 eggs, incubation lasts 34 to 36 days, and the nesting period can run from 56 to 98 days, typically starting in April. Cottonwood trees along Utah's rivers, lakes, and reservoirs are considered critical for roost and nest sites (UDWR 2009b).

BIG FREE-TAILED BAT. The big free-tailed bat occurs throughout the western U.S. and Central America. It prefers rocky and woodland habitats and roosts in caves, mines, old buildings and rock

crevices. Big free-tailed bats are insectivores and primarily feed on moths. They occur along the Green River and may be present in the study area (UCDC 2013).

BLUEHEAD SUCKER. The bluehead sucker is a benthic (bottom dwelling) species with a mouth modified to scrape algae (the primary food of the bluehead sucker) from the surface of rocks. Members of the species spawn in streams during the spring and summer. Fast flowing water in high gradient reaches of mountain rivers has been identified as important habitat for bluehead sucker. The bluehead sucker may be present in the study area.

BURROWING OWL. The burrowing owl breeds in the western U.S. and Canada, northern Mexico and parts of Florida and the West Indies. It winters from the southwestern U.S. into Central America. It typically occurs in open grasslands, but can use other open habitats including golf courses and airports. Its prey is mainly terrestrial invertebrates and small mammals, birds, amphibians and reptiles. The burrowing owl occurs along the Green River and may be present in the study area (UCDC 2013).

CORNSNAKE. The cornsnake occurs in northern Mexico and the southeastern U.S., but an isolated population is known to occur in eastern Utah and western Colorado. They are typically found near streams and in rocky or forested habitats. Cornsnakes eat small mammals, birds, reptiles, and insects. They are known to occur east of the Green River and could be present in the study area (UCDC 2013).

FERRUGINOUS HAWK. The ferruginous hawk breeds throughout western North America and winters in western and central U.S. and Mexico. It uses grasslands and shrub steppes in both breeding and wintering seasons. The primary prey are small mammals. It is known to occur in the project area and may be present (UCDC 2013).

FLANNELMOUTH SUCKER. The flannelmouth sucker, *Catostomus latipinnis*, is native to the Colorado River system of the western United States and northern Mexico. In Utah, the species occurs in the main-stem Colorado River, as well as in many of the Colorado River's large tributaries. Flannelmouth suckers are benthic (bottom dwelling) fish that primarily eat algae, although invertebrates and many types of plant matter are also consumed. The species spawns in streams over gravelly areas during the spring and early summer. Flannelmouth suckers prefer large rivers, where they are often found in deep pools of slow-flowing, low gradient reaches. It is known to occur in the project area and may be present (UCDC 2013).

GREAT PLAINS TOAD. The Great Plains toad occurs widely across western and central North America. It uses desert, grassland, and agricultural habitats. It is known to occur in the study area and is likely to be present (UCDC 2013).

ROUNDTAIL CHUB. The roundtail chub is a large minnow that occurs in the Colorado River system and is present in the Green River. It occurs in large rivers and uses murky pools near swiftwater. It spawns in gravel substrates in spring and summer. It is likely to be present in the study area (UCDC 2013).

SPOTTED BAT. The spotted bat occurs throughout western North America. They may be found in deserts, forested areas, and mountains. Roosting occurs in caves and rock crevices. They occur in the study area and could be present (UCDC 2013).

TOWNSEND'S BIG-EARED BAT. Townsend's big-eared bat occurs in western North America. In Utah, it can occur in many types of habitat, but is most commonly found near forested areas. Caves, mines and buildings are used for roosting. It is known to occur in the study area and could be present (UCDC 2013).

WHITE-TAILED PRAIRIE-DOG. The white-tailed prairie dog occurs Utah, Colorado, Wyoming, and Montana. They are a burrowing mammal and occur in grasslands, deserts, and shrub steppe. They primarily feed on grasses and bulbs. They are known to occur in the study area and could be present (UCDC 2013).

2.0 REFERENCES

CBD (Center for Biological Diversity). 2007. Bald Eagle Population Exceeds 11,000 Pairs in 2007. Long-term trend for each state available for first time. Available at biologicaldiversity.org.

Cornell Lab of Ornithology. 2013. Bald Eagle. Available at http://www.allaboutbirds.org/guide/bald_eagle/id.

UCDC. 1999. Utah Gap Analysis Breeding/Wintering Habitat Bald Eagle. DWR Neotrops Revision. Available at dwrcdc.nr.utah.gov.

Utah Conservation Data Center (UCDC). 2011. Utah Sensitive Species List by County. Accessed online at <http://dwrcdc.nr.utah.gov/ucdc/ViewReports/sslist.htm>.

UCDC. 2013. Make a Wildlife Map. Maps and GIS Data. Interactive mapping feature for selected game managed species in Utah. Available at dwrcdc.nr.utah.gov/ucdc.

UDWR. 2009b. Bald Eagle (*Haliaeetus leucocephalus*). Wildlife Notebook Series No. 3.



Figure 1. Green River Diversion Rehabilitation— BLM Plant Survey Area in Emery County, Utah

DRAFT MEETING MINUTES

McMILLEN, LLC

To:	Meeting Attendees	Project:	NRCS Green River Diversion Rehabilitation
From:	Dan Axness	cc:	File
Meeting Date:	March 4, 2013	Job No:	AG-3A75-C-10-0025
Subject:	Draft Green River EA vs EIS Meeting Minutes.		

1.0 INTRODUCTION

This memorandum documents the meeting held on March 4, 2013 via phone conference with attendees in Salt Lake City, Utah (NRCS) and in Boise, Idaho (McMillen). The meeting began at 11:00 am and the following people were in attendance:

Attendee	Project Role	Organization
Bronson Smart	State Conservation Engineer	NRCS, Utah
Norm Evenstad	Water Resources Coordinator	NRCS, Utah
Andrew Williamson	State Archaeologist	NRCS, Utah
Casey Burns	State Biologist	NRCS, Utah
Anthony Beals	EWP Specialist	NRCS, Utah
Derek Hamilton	EWP Biologist	NRCS, Utah
Dan Axness	Project Manager	McMillen, LLC
Greg Allington	NEPA Manager	McMillen, LLC

2.0 DISCUSSION

EA vs EIS

During the site meeting on February 22, 2013 with the Utah State Historic Preservation Office, it was determined that any modification to the diversion dam would be an adverse effect to cultural resources. The level of intensity of those impacts would be dependent on the proposed alternative for the project. Currently, the proposed alternative is to demolish the existing structure and install a new structure downstream to stabilize the structure stability and improve fish passage.

Impacts to the structure would most likely be considered “significant” which would require the preparation of an Environmental Impact Statement (EIS) to comply with the National

Environmental Policy Act (NEPA). Currently, the project is being analyzed under an Environmental Assessment (EA).

Andrew Williamson stated that the project team may spend as much time, effort and money justifying why this is not an EIS as it would take to prepare an EIS.

Bronson Smart and Dan Axness pointed out that changes required for stability, construction access and fish passage will require significant changes to the structure including:

- Cutting the diversion dam to construct fish passage notches to concentrate low flows moving over the structure;
- The existing structure will require the addition of a concrete cap as a "wearing surface"; and
- Preventing seepage under and through the will require the addition of steel pile and significant concrete fill.

It was determined by the meeting attendees that the project will proceed with the preparation of an EIS. McMillen stated they will develop a cost estimate and revised schedule for a Contract Amendment to develop the EIS and other studies that will be required for supplementation.

Cultural Mitigation

Dan Axness suggested that NRCS should use McMillen's subcontractor (Native-X) architectural historian to help document historic structures for the project. The group discussed the potential roles for Native X which would include documenting the current structure and preparing mitigation plans to address adverse effects caused by repair or replacement of the existing structure.

The group noted during the meeting that any alternative would require some sort of cultural mitigation.

3.0 CLOSING

The meeting adjourned at 11:30 am.

4.0 ACTION ITEMS

- McMillen prepare cost estimate and revised schedule for a Contract Modification to prepare an EIS.
- McMillen talk to Native-X regarding their possible role in the project.



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

July 1, 2013

In Reply Refer To:
FWS/R6
ES/UT
09-I-0217

Mr. Bronson Smart, State Engineer
Natural Resource Conservation Service
125 S. State Street – Room 4010
Salt Lake City, UT 84138-1100

RE: Green River Diversion Rehabilitation, Grand & Emery Counties, Utah; EIS Scoping Comments

Dear Mr. Smart:

On June 3, 2013, we received your Notice for a 2nd Scoping Period for the rehabilitation of the Green River Diversion (Diversion), which spans the Green River upstream of the town of Green River, Utah. We appreciate the coordination between our offices and your support of endangered species considerations during the preliminary discussions concerning this project. As we further describe below, it is important that the rehabilitation of the Green River Diversion consider impacts to federally listed fish species. In response to your scoping notice, we submit the following comments pursuant to our authorities under the National Environmental Policy Act and the Endangered Species Act (ESA) of 1973.

Importance of the Green River to endangered fish recovery

Four federally endangered species inhabit the Green River: bonytail (*Gila elegans*); Colorado pikeminnow (*Ptychocheilus lucius*); humpback chub (*Gila cypha*); and razorback sucker (*Xyrauchen texanus*). Portions of the Green River are designated as critical habitat to all four species; the entire length of the Green River and its 100 year floodplain is designated as critical habitat for at least one species between the Yampa River confluence and the Colorado River confluence (Appendix A)¹. Furthermore, the Diversion is located within critical habitat for the Colorado pikeminnow and razorback sucker, and directly downstream of Desolation Canyon, which is designated critical habitat for the bonytail and humpback chub.

The Green River Basin, particularly the mainstem Green River, is vital to the recovery of these four species. Maintaining self-sustaining populations in the Green River is a recovery goal for all four

¹ For a detailed description of the critical habitat reaches, please see the Federal Register: 59 FR 13374

species (U.S. Fish and Wildlife Service 2002a, 2002b, 2002c, 2002d). Currently, the Green River Basin harbors:

- the largest, most productive, and most robust population of the Colorado pikeminnow;
- two known, active spawning locations of the Colorado pikeminnow;
- two known population centers of humpback chub;
- two known, active spawning locations of the razorback sucker; and
- populations of stocked individuals of razorback sucker and bonytail;

These four species are adapted to desert river hydrology (characterized by large spring peaks of snow-melt runoff and low, relatively stable base flows) and long, unimpeded stretches of river. Unimpeded stretches of river are crucial to the life histories of these species in order to support migrations of spawning individuals, drifting of newly produced young-of-year fish, and home-range expansion of juveniles. Specifically, razorback sucker and Colorado pikeminnow annually migrate to established spawning areas to reproduce (U.S. Fish and Wildlife Service 2002b, 2002d). Individuals travel long distances to reach these sites (745 river kilometers round-trip on record for Colorado pikeminnow) (U.S. Fish and Wildlife Service 2002b). Colorado pikeminnow spawn in two principal sites: Gray Canyon in the lower Green River; and the lower Yampa River (U.S. Fish and Wildlife Service 2002b). Known spawning sites for razorback sucker are located in the lower Yampa River and in the Green River near Escalante Ranch, but other, less-used sites are probable (U.S. Fish and Wildlife Service 2002d). Because all of the spawning sites are upstream of the Diversion, any individual fish that occurs downstream of the Diversion (or in the Colorado River) must pass over the Diversion to reach these spawning sites (and conversely must pass over it in the downstream direction to return to their home range).

After viable eggs are produced at spawning areas, eggs hatch into larval fish. Larval fish remain in the river substrate for about a week and then emerge into the water column. Larval fish are very small (<0.5 inches total length) and incapable of directed swimming from the time of hatching through the first 2-4 weeks of their life. As a result, they drift downstream with the current, ending up in slow water habitats where they can grow and achieve swimming ability. Because the Diversion is downstream of spawning locations, many larval fish pass over the Diversion each year. This input of larval fish makes the lower Green River an important nursery area for young fish.

As young fish in the lower Green River grow and reach sexual maturity, they require an ability to migrate to spawning locations and other new habitats. In fact, juvenile fish in the lower Green River commonly leave this area and establish new home areas upstream. Increased recruitment² that resulted in increased abundance of adult Colorado pikeminnow in the Green River Basin in 2006 to 2008 likely originated from a large year class of age-0 Colorado pikeminnow produced in the lower Green River during 2000 (Bestgen *et al.* 2010). Furthermore, population studies indicate that many small Colorado pikeminnow leave the lower Green River and immigrate into upstream areas such as Desolation Canyon and the White River (Bestgen *et al.* 2010). Overall transition rates reflect a general movement pattern of Colorado pikeminnow from Desolation-Gray Canyon and the lower Green River into upstream reaches; this trend demonstrates that young fish reared in the lower Green River support populations of adult fish throughout the Green River basin (Bestgen *et al.* 2010).

² Recruitment is defined as an organism transitioning from an immature individual to a sexually mature individual; thus becoming a reproductively active member of the population

As you can see, maintaining connectivity between population centers and spawning sites is vital to reaching the de-listing goals of self-sufficient populations of these endangered fish species for a variety of biological reasons.

Considerations for the Green River Diversion rehabilitation

In the course of designing any future modifications to the Green River Diversion, it is important to consider how the modifications may impact the endangered fish species and how the impacts may be avoided, minimized, or mitigated. We foresee the following considerations as being important for any design modification:

1. *Fish Passage* – Providing safe, effective fish passage for both up- and downstream movements year-round in most years;
2. *Reducing Construction Impacts* – Avoiding impacts whenever feasible by following proper construction BMPs, work timing, material selection, and de-watering protocols;
3. *Maintaining Habitat* – Maintaining suitable habitat in the project vicinity, by providing adequate hydrological, thermal, and chemical conditions; and
4. *Electrical Barrier Component* – Assisting the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) in the effective design, construction, and operation of an electric barrier to prevent fish entrainment into the Green River Canal and Thayn Hydroelectric facility.

Fish Passage

As described in detail above, it is critical to species recovery that the Green River Diversion does not act as a barrier to fish movement. If individuals are prevented from migrating up- and downstream, the populations of the four species will be heavily impacted. We have spoken with your office about designing an appropriate suite of fish passage options, including an upstream passage on river left (near the water wheel), downstream fish passage ‘notches’, and a fish return system from the ‘raceway’³ section.

Designing fish passage for native, warm-water fishes requires special design criteria because these species are not equipped with strong burst speeds or jumping abilities. Therefore, fish-ladders (or other structures designed for salmonids) will not work for these species. Fish passage design must take into account native fish swimming ability, which is related to body size. At this time we believe any upstream fish passage must be able to move individuals that are 200 millimeters and longer. This size requirement should allow the smallest juvenile fish (and therefore the weakest swimmer) that might leave the lower Green River to access upstream habitats.

In addition, designs must analyze flows available inter- and intra-annually, to ensure that flows will be available year round to operate the facility. In other words, the fish passage options must work year round, under a variety of flow regimes, in the vast majority of years. Most importantly the fish passage must work in the majority of dry years, when little flow is available at the Diversion. However, our office understands that the fish passage should not infringe upon any existing water right in the local area, so passage operation will need to be closely monitored.

³ The large channel that takes water to both the Green River Canal and Thayn Hydroelectric facility

We have recently seen comments requesting downstream boat passage at the structure. We have no opposition in principle to boat passage – in fact scientific research crews would likely benefit from the use of such a boat passage. However, we strongly emphasize that any boat passage design must be able to maintain the important fish passage components. That is, the design of a boat passage must ensure that proper water velocities and quantities are maintained at the fish passage, and funds are still available to construct the fish passage. Any reduced function of a fish passage structure would be considered in an inter-agency consultation under the Endangered Species Act.

We believe that designing an effective set of fish passage options is quite feasible. We are encouraged by initial discussions with your office that demonstrate the potential for such structures. We would like to continue coordinating and working with your office's engineers to help design a long-lasting Diversion that will support water use and benefit native fish species.

Construction Impacts

Once a preferred alternative is chosen for the Diversion rehabilitation, it will be important for our offices to work closely on appropriate construction methods to reduce impacts to the river and to individual fish. When working in designated critical habitat it is important to choose the least impactful techniques for accomplishing effective construction. Usually the least impactful timing for construction is in the fall, as the reproductive season has ended and flows are safer for construction crews.

The de-watering component of the project is a key decision that will affect construction and fish. We support using the existing structure as a possible de-watering feature, as it may reduce the impact of installing new de-watering structures. Whatever de-watering option is chosen, we ask that it not act as a fish passage barrier, that it be cleared of fish trapped inside before work begins, and that it not contribute large sediments loads to the downstream areas.

Maintaining Habitat

It is important that suitable habitat for endangered fish species is maintained in the vicinity of the Diversion after the project is complete. In fact, because this stretch of river is designated critical habitat for the razorback sucker and Colorado pikeminnow, a project cannot adversely modify the habitat. We have specific habitat criteria, called primary constituent elements (PCEs) for the designated critical habitat in the Green River.

Water, physical habitat, and the biological environment are the PCEs of critical habitat for these fish species. This includes a quantity of water of sufficient quality that is delivered to a specific location in accordance with a hydrologic regime that is required for the particular life stage for each species. The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. In addition, oxbows, backwaters, and other areas in the 100-year floodplain, when inundated, provide access to spawning, nursery, feeding, and rearing habitats. Food supply, predation, and competition are important elements of the biological environment.

Habitat in the vicinity of the project would need to remain suitable for endangered fish. For this project, habitat condition is largely controlled by flows in the river channel. Habitat conditions regulated by flows that must be considered include, but are not limited to:

- Adequate water depth for fish movement, both over the diversion through a passage facility and local movement across the river channel; and
- Suitable chemical conditions, such as temperature, dissolved oxygen, and pollution levels.

Proper water management at the Diversion will ensure that the project does not dry dam the Green River. Dry damming the river will result in significant entrainment issues and effectively remove habitat from that portion of the river. Analyses must be conducted to clearly identify the flows necessary to provide adequate habitat for the endangered fish downstream of the Diversion.

Electrical Barrier Component

It is the responsibility of the Recovery Program to enact a project that reduces the existing entrainment of fish into the Green River Canal and Thayn Hydroelectric facility. After careful deliberation, the Recovery Program has chosen to fund the construction and operation of an electric barrier that inhibits fish entrainment into these facilities by creating an electric field which irritates fish and compels them to leave the area. The Recovery Program believes that this electric barrier is a superior option to an alternative of installing a physical rolling drum screen structure because it will offer more effective entrainment prevention and will not negatively affect water use in the area.

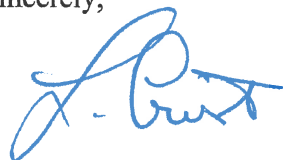
Because the two projects (the Diversion rehabilitation and the electric barrier) will each benefit if designed, constructed, and operated as one, your office and the Recovery Program have been in consistent discussions about the electrical barrier component. We applaud your early coordination that will ensure that both projects are congruous.

To enact the project, the Recovery Program will fund the design, construction, and operation of the electrical barrier components. To assist in this process your office has agreed to consider these design, construction, and operation components in your project planning. To ensure successful implementation of both projects, please continue this coordinated effort. The effective operation of the electric barrier is a key component of species recovery, and your assistance in the project is greatly valued.

Conclusion

We appreciate your office's continued coordination with us concerning this project. Through the entire process, your office has been very supportive of ideas to promote native species. Thank you for the opportunity to comment on this project. We look forward to working with you in the future. If you have any questions or need further information please contact Kevin McAbee at (801) 975-3330 extension 143.

Sincerely,



Larry Crist
Utah Field Supervisor

cc: Upper Colorado River Endangered Fish Recovery Program; Attn: Tom Chart

Region 6 RO; Attn: Dave Carlson

Lisa Chetnik Treichel
DOI Office of Environmental Policy and Compliance
1849 C Street, NW --MS 2462-MIB
Washington, DC 20240

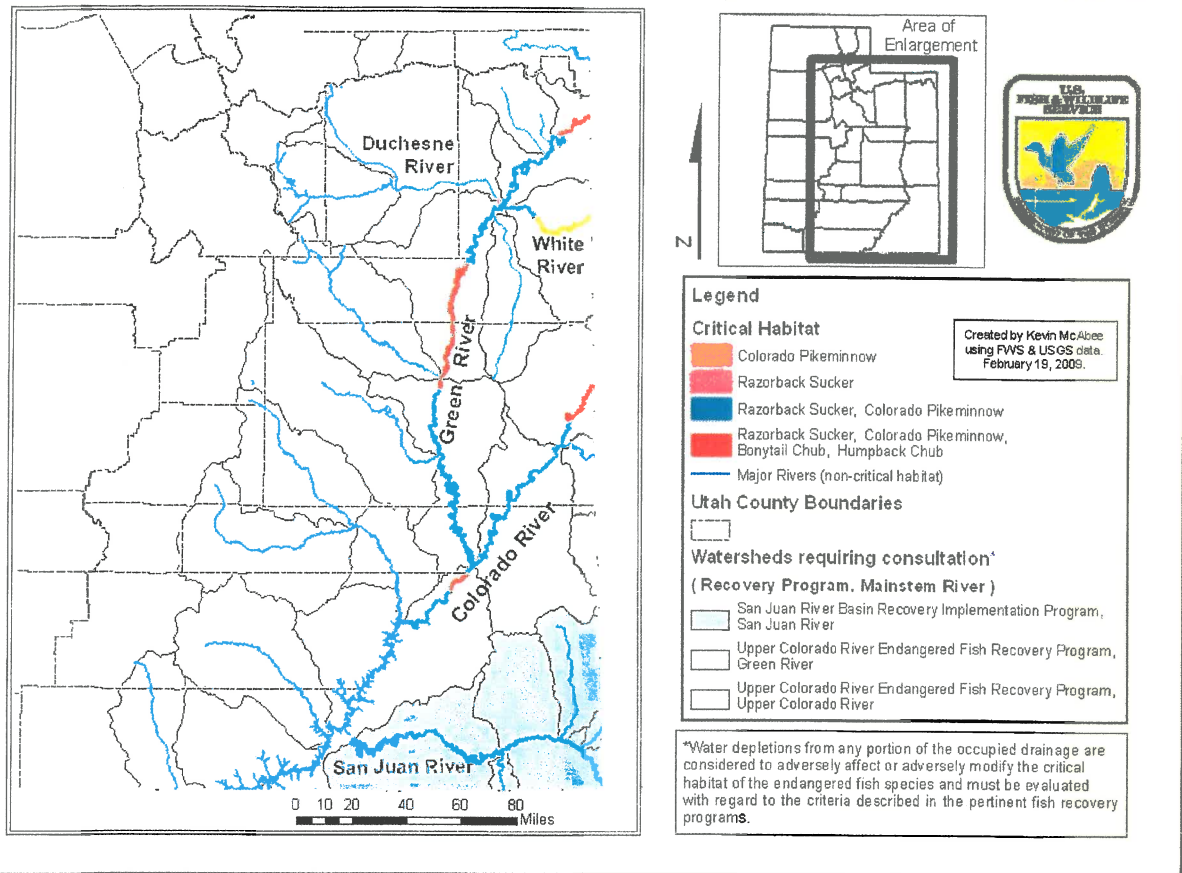
Stephanie M. Nash, Environmental Protection Specialist
Division of Habitat and Resource Conservation
Branch of Conservation Planning Assistance
4401 North Fairfax Drive, ARLSQ-840J
Arlington, VA 22203

Literature Cited

- Bestgen, K. R., J. A. Hawkins, G. C. White, C.D. Walford, P. Badame & L. Monroe. 2010. Population Status of Colorado pikeminnow in the Green River Basin, Utah and Colorado, 2006-2008. Colorado River Recovery Implementation Program Project Number 128. 112 pages.
- U.S. Fish and Wildlife Service. 2002a. Bonytail (*Gila elegans*) Recovery Goals: amendment and supplement to the Bonytail Chub Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 97 pages.
- U.S. Fish and Wildlife Service. 2002b. Colorado pikeminnow (*Ptychocheilus lucius*) Recovery Goals: amendment and supplement to the Colorado Squawfish Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 111 pages.
- U.S. Fish and Wildlife Service. 2002c. Humpback chub (*Gila cypha*) Recovery Goals: amendment and supplement to the Humpback Chub Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 107 pages.
- U.S. Fish and Wildlife Service. 2002d. Razorback Sucker (*Xyrauchen texanus*) Recovery Goals: amendment and supplement to the Razorback Sucker Recovery Plan. Denver, Colorado: US Fish and Wildlife Service, Mountain-Prairie Region. 113 pages.

Appendix A

Designated Critical Habitat in Utah for Federally Listed Colorado River Fish





GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Julie Fisher
*Executive Director
Department of
Heritage & Arts*



Utah Division of
State History

Brad Westwood
Director

RECEIVED OCT 18 2013

October 16, 2013

David C. Brown
State Conservationist
Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, Utah 84138-1100

RE: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery
Counties, Utah U-13-SH-0354

For future correspondence, please reference Case No. 13-1253

Dear Mr. Brown:

The Utah State Historic Preservation Office received your request for our comment on the
above-referenced undertaking on October 11, 2013.

We concur with your determinations of adverse effect for this undertaking. We look forward to
working with you on an MOA.

This letter serves as our comment on the determinations you have made, within the consultation
process specified in §36CFR800.4. If you have questions, please contact me at 801-245-7263 or
Lori Hunsaker at 801-245-7241 lhunsaker@utah.gov.

Sincerely,

Chris Merritt, Ph.D.
Senior Preservation Specialist
cmerritt@utah.gov

Williamson, Andrew - NRCS, Salt Lake City, UT

From: Monson Shaver <monsonshaver@utah.gov>
Sent: Monday, October 21, 2013 11:56 AM
To: Williamson, Andrew - NRCS, Salt Lake City, UT; Smith, Grant - NRCS, Price, UT; Laura Ault
Subject: Cultural Resources Inventory of the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah. 13-SH-0354ps

Gary,

Thank you for the opportunity to review and comment on report 13-SH-0354bps. The Division of Wildlife Resources, in consultation with Forestry Fire and State Lands (FF&SL), concurs with the National Resources Conservation Services (NRCS) site eligibility recommendations. FF&SL also concurs that the proposed rehabilitation will adversely affect the Tusher Diversion Dam (42Em4444/42Gr4835) and the East Side Canal (42Gr4423).

FF&SL appreciates that the NRCS will continue consultation with Utah State Preservation Office (SHPO) to develop a treatment plan to mitigate or minimize adverse effect to these sites. The FF&SL looks forward to a treatment plan that will be formalized in a Memorandum of Agreement (MOA).

-

Monson Shaver
Archaeologist
Utah Division of Wildlife Resources
W 801-538-4864
Cell 801-674-8787



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Green River District, Price Field Office
125 South 600 West
Price, UT 84501
<http://www.blm.gov/ut/st/en/fo/price.html>



JAN 17 2014

IN REPLY REFER TO:
8100 UTU-1310 (UTG021)

David C. Brown
Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100

RE: A Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Mr. Brown:

The Bureau of Land Management (BLM), Price Field Office received your request for our concurrence on the above-mentioned undertaking on October 12, 2013.

We concur with your determinations of eligibility and effect for those properties located on BLM administered lands. The BLM looks forward to working with the Natural Resources Conservation Service (NRCS) as a cooperating agency to resolve adverse effects to the historic properties impacted by the proposed undertaking.

We appreciate the efforts of the NRCS in helping the BLM meet its obligations, evaluate, and protect historic properties. Thank you for your assistance in these matters.

If you have any questions, please contact Amber Koski at (435) 636-3618 or by e-mail at akoski@blm.gov.

Sincerely,

Patricia Clabaugh
ACTING FOR Field Manager

cc: Amber Koski, Archaeologist,
Price Field Office



State of Utah

GARY R. HERBERT.
Governor

SPENCER J. COX
Lieutenant Governor

February 10, 2014

David C. Brown
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Wallace F. Bennett Federal Building
125 South State Street, Room 4010
Salt Lake City, Utah 84138-1100

Dear Mr. Brown,

The Utah Department of Agriculture and Food is pleased to work in cooperation with the Natural Resources Conservation Service in the Restoration of the (Tusher Diversion) Green River Dam. As the funding agency of the project we appreciate working together to protect and enhance our natural resources. We have a great history in Utah and continually work to preserve our heritage.

At our meeting on February 6, 2014, we discussed several options for documenting the history of the diversion and the impact it has made to the local economy and sustainability of agriculture producers in Green River.

The Utah conservation Commission as a division of the Utah Department of Agriculture and Food (Utah Code 4-18) has authority to seek to coordinate soil and water protection, conservation, and development activities and programs of state agencies, local governmental units, other states, special interest groups, and federal agencies and plan watershed and flood control projects in cooperation with appropriate local, state, and federal authorities, and coordinate flood control projects in the state.

We are working with the Green River Conservation District and the local canal companies to ensure that the Agricultural interests in Utah are recognized. After our meeting last week and upon review of the cultural resources report, we agree with the determination of archaeological eligibility and the determination of the effects to the archaeological sites. The Department of Agriculture and Food is committed to a continued working relationship as a cooperating agency with the Natural Resources Conservation Service to fulfill its obligations under the National Environmental Policy Act and the National Historic Preservation Act. We will work in cooperation with partnering agencies to resolve the adverse effects to the historic properties which are impacted.

Thayne Mickelson

Utah Conservation Commission
Executive Director

Department of Agriculture and Food

Leonard M. Blackham
Commissioner

Kyle R. Stephens
Deputy Commissioner

Thayne R. Mickelson
*Utah Conservation Commission
Executive Director*

RECEIVED FEB 11 2014

United States Department of Agriculture



Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Mr. Paul Abate
Fish Biologist
U.S. Fish and Wildlife Services
2369 West Orton Circle, Suite # 50
West Valley City, Utah 84119

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Abate:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. U.S. Fish and Wildlife Services is a cooperating agency and is providing funding for the protection of endangered fish and has already provided guidance regarding fish-friendly design in the proposed diversion rehabilitation. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests U.S. Fish and Wildlife Services comments regarding the project eligibility determinations and determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistance State Conservationist-Field Operations, NRCS, Richfield, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Mr. Greg Allington
NEPA Specialist
McMillen, LLC.
1401 Shoreline Suite 100
Boise, Idaho 83702

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Allington:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, The Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests comments from McMillen, LLC regarding site eligibility determinations and the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

 *Acting*
DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)
Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistance State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Salt Lake City, Utah

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Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Ms. Laura Ault
Sovereign Lands Program Manager
Department of Natural Resources
1594 West North Temple
Salt Lake City, Utah 84116

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Ms. Ault:

Enclosed are three IMACS site forms and a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Ute Tribe of Utah U.S. Fish and Wildlife Services, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests State Sovereign Lands concurrence for the eligibility determinations and for the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "DB Brown", followed by the typed name "DAVID C. BROWN".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Richfield, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Mr. Dan Axness
Design Engineer
McMillen, LLC.
1401 Shoreline Suite 100
Boise, Idaho 83702

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Axness:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests comments from McMillen, LLC, regarding site eligibility determinations and the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Mr. Pat Brady
Mayor of Green River City
460 East Main Street
P.O. Box 620
Green River, Utah 84525

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Mr. Brady:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

The NRCS has determined that project installation will have a direct adverse effect on two NRHP-eligible site—the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, U.S. Fish and Wildlife Services, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS invites your comments regarding project implementation as it relates to the historic properties presented in the enclosed report. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "David C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Ms. Jo Anne Chandler
Administrator
Green River Historic Preservation Commission,
Historical Society and Archives
1765 East Main Street
P.O. Box 620
Green River, Utah 84525-0620

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Ms. Chandler:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead federal agency for this project, the NRCS invites your comments regarding project plans and the affects implementation may have on the associated historical resources. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

 *David C. Brown*
DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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United States Department of Agriculture



Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Ms. Patricia Clabaugh
Bureau of Land Management
Price Field Office
125 South 600 West
Price, Utah 84501

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Ms. Clabaugh:

Enclosed are four IMACS site forms and a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the U.S. Fish and Wildlife Service, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation (ACHP). The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

Two NRHP-eligible sites and two non-significant sites are located on property managed by the Bureau of Land Management (BLM) Price Field Office. The sites are located along the west bank of the Green River and include the Tusher Diversion Dam (42EM4444/42GR4835) and one multicomponent site that may be on BLM land (42EM4439). The non-significant sites include one historic and modern trash scatter (42EM4440) and two rock panels (one panel is on BLM land and one is on State Sovereign Lands) with historic inscriptions (42EM4441).

As the lead Federal agency for this project, the NRCS requests BLM concurrence for the eligibility determinations and for the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "David C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Richfield, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Natural Resources Conservation Service
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Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Ms. Irene Cuch
Ute Indian Tribe of the Uintah & Ouray Reservation, Utah
P.O. Box 190
Fort Duchesne, Utah 84026

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Ms. Cuch:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District for the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests comments from the Ute Tribe for the eligibility determinations and for the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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September 30, 2013

Mr. Chris Dunham
East Side Canal Company
P.O. Box 193
1200 North Hastings Road
Green River, Utah 84525

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Mr. Dunham:


Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS invites your comments regarding project implementation as it relates to the historic properties presented in the enclosed report. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

 *ACR/MS*
DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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FAX (801) 524-4403

October 10, 2013

Mr. Jason A. Gipson
Chief
Nevada-Utah Regulatory Branch
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Mr. Gipson:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District for the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah BLM Field Office, The Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests your comments for the eligibility determinations and for the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "D.C. Brown", is written over the typed name "DAVID C. BROWN".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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September 30, 2013

Mr. Jeff Horrocks
Emery County Commissioner
P.O. Box 629
Castle Dale, UT 84513

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Mr. Horrocks:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District for the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead agency for this project, the NRCS requests any comments you may have regarding project effects on historic properties identified during the cultural resources survey. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "DAVID C. BROWN".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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September 30, 2013

Ms. Lori Hunsaker
Deputy State Historic Preservation Officer - Archaeology
Utah Division of State History
300 Rio Grande Avenue
Salt Lake City, Utah 84101-1182

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Ms. Hunsaker:

Enclosed are a SHPO Cover Page, seven archaeological site forms, one archaeological site form addendum, and a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District for the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS requests SHPO concurrence for the eligibility determinations and for the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "David C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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September 30, 2013

Mr. Brian Joseph
Archaeologist
Bureau of Reclamation
Upper Colorado Region Area Office
302 East 1860 South
Provo, Utah 84606-1000

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Joseph:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District for the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead agency for this project, the NRCS requests your comments for the eligibility determinations and for the determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "David C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Salt Lake City, UT 84138-1100
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FAX (801) 524-4403

September 30, 2013

Mr. Dean King
President
Green River Canal Company
P.O. Box 326
1120 East Kings Lane
Green River, Utah 84525

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah (U-13-SH-0354bps)

Dear Mr. King:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS invites your comments regarding project implementation as it relates to the historic properties presented in the enclosed report. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Mr. Monson Shaver
Archaeologist
Utah Division of Wildlife Resources
Box 146301
Salt Lake City, Utah 84114-6301

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Shaver:


Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS invites comments from your agency regarding the project eligibility determinations and determination of project effects. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

 *David C. Brown*
DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Richfield, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Salt Lake City, UT 84138-1100
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FAX (801) 524-4403

September 30, 2013

Mr. Lee Thayn
Thayn Power Plant & Thayn Ditch
P.O. Box 447
1915 North Long Street
Green River, Utah 84525

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Thayn:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead Federal agency for this project, the NRCS invites your comments regarding project implementation as it relates to the historic properties presented in the enclosed report. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. C. Brown", followed by the typed name "DAVID C. BROWN".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)

Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistance State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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Natural Resources Conservation Service
125 South State Street, Room 4010
Salt Lake City, UT 84138-1100
(801) 524-4550
FAX (801) 524-4403

September 30, 2013

Mr. Michael Wolfe
Chairperson
Grand County Historic Preservation Commission
220 East Market
Meeker, Colorado 81641

Reference: Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah
(U-13-SH-0354bps)

Dear Mr. Wolfe:

Enclosed is a report titled "Cultural Resources Survey for the Green River Diversion Rehabilitation, Grand and Emery Counties, Utah". In brief, the Natural Resources Conservation Service (NRCS) has been providing technical and financial assistance to the Utah Department of Agriculture and Food and the Green River Conservation District with the rehabilitation of a large diversion dam located on the Green River near the town of Green River, Utah. Flooding in 2010-2011 exposed weaknesses in an existing diversion structure and raised concern over the continued safe functioning of the dam.

NRCS Area Cultural Resources Specialist Grant Carlos Smith completed an inventory of the project's area of potential effects (APE) and identified a total of eight archaeological sites, six of which are eligible for the National Register of Historical Places (NRHP). The eligible sites include the Tusher Diversion Dam (42EM4444/42GR4835), Hastings Ranch (42GR4836), the East Side Canal (42G4423), the Green River Canal (42EM4443), the Thayne Canal or 42-foot ditch (42EM4442), and one multicomponent site with an eligible prehistoric component (42EM4439). The non-significant sites include a historic and modern trash scatter (42EM4440) and two rock panels with historic inscriptions (42EM4441).

Applying the *Criteria of Adverse Effects* per 36 CFR 800.5.a.1, the NRCS has determined that the proposed rehabilitation will adversely affect the Tusher Diversion Dam and the East Side Canal. The NRCS will continue to consult with the Utah SHPO and other consulting parties to develop a treatment plan to mitigate or minimize adverse effects to the sites. Other participants in the process will include the Price, Utah, Bureau of Land Management Field Office, the Division of Forestry Fire and State Lands, the Ute Tribe of Utah, private landowners, and the Advisory Council for Historic Preservation. The agreed upon treatment plan will be formalized in a Memorandum of Agreement (MOA).

As the lead federal agency for this project, the NRCS invites your comments regarding project plans and the affects implementation may have on the associated historical resources. If you have any questions, comments, or concerns, please contact Grant Carlos Smith, Cultural Resources Specialist, at 435-637-0041 ext. 119 at your earliest possible convenience.

Sincerely,

A handwritten signature in dark ink, appearing to read "David C. Brown".

DAVID C. BROWN
State Conservationist

Enclosure

cc: (w/o encl)
Elise Boeke, State Resource Conservationist, NRCS, Salt Lake City, Utah
Bronson Smart, State Conservation Engineer, NRCS, Salt Lake City, Utah
Barry A. Hamilton, Assistant State Conservationist-Field Operations, NRCS, Price, Utah
Andrew M. Williamson, Cultural Resources Specialist, NRCS, Salt Lake City, Utah
Grant Carlos Smith, Area Cultural Resources Specialist, NRCS, Price, Utah

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DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Forestry, Fire and State Lands

BRIAN L. COTTAM
Division Director / State Forester

January 31, 2014

David C. Brown
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Wallace F. Bennett Federal Building
125 South State Street, Room 4010
Salt Lake City, Utah 84138-1100

Dear Mr. Brown,

By virtue of its sovereignty, the State of Utah owns the bed of Green River below the ordinary high water mark at statehood from the boundary between Townships 23 and 24 South (approximately the mouth of the San Rafael River) down to the confluence of the Green and Colorado Rivers, excepting the portion within the boundaries of Canyonlands National Park; between the point at which the Green River exits the boundaries of Dinosaur National Monument (Mile 312 above the confluence of the Green and Colorado Rivers) to the mouth of Sand Wash (Mile 212.7 above the confluence of the Green and Colorado Rivers); and between the point where the river emerges from Gray Canyon (Mile 129 above the confluence of the Green and Colorado Rivers) to the boundary line between Townships 23 South and 24 South (Mile 95 above the confluence of the Green and Colorado Rivers).

As provided for in Utah Administrative Code Subsections 65A-1-2 and 65A-10-1, the Division of Forestry, Fire and State Lands (FFSL) is the agency authorized to manage sovereign lands within the State of Utah, including the Green River. Sovereign lands are managed under multiple-use/sustained-yield principles and the Public Trust Doctrine as directed by statute. In order to meet this mandate, FFSL must ensure that all uses on sovereign lands are regulated such that protection of navigation, fish and wildlife habitat, public recreation, and water quality are balanced against the economic necessity or benefit to be derived from any proposed use.

FFSL appreciates the invitation to participate in the consultation process. After reviewing the cultural resources report FFSL concurs with the determination of archaeological site eligibility and the determination of project effects to the archaeological sites. FFSL looks forward to working as a cooperating agency with the Natural Resources Conservation Service (NRCS) to fulfill its obligations under the National Environmental Policy Act and the National Historic Preservation Act. As a cooperating agency, FFSL will work with the NRCS and the other consulting parties to resolve the adverse effects to the historic properties impacted by the proposed undertaking. FFSL will have a representative present at the meeting at the Tusher Diversion on February 6, 2014.



Page 2
January 31, 2014
Subject:

If you have any questions or need additional information please contact me at 801.538.5540 or lauraault@utah.gov. You may also contact Alison Lerch, the Division's Sovereign Lands Coordinator based in Moab, at 435.210.0362 or alisonlerch@utah.gov.

Sincerely,

A handwritten signature in blue ink that reads "Laura Ault". The signature is fluid and cursive, with the first name "Laura" and last name "Ault" clearly distinguishable.

Laura Ault
Sovereign Lands Program Manager

From: Williamson, Andrew - NRCS, Salt Lake City, UT
<andrew.williamson@ut.usda.gov>
Sent: Tuesday, February 11, 2014 3:11 PM
To: greg.allington@mcmillen-llc.com; Aimee Hill (aimee.hill@mcmillen-llc.com);
annalee@etv.com; Dale Gray (dalegray@mindspring.com); John W. Jones;
alisonlerch@utah.gov; Christopher Hansen (clhansen@utah.gov);
gra@etv.net; akoski@blm.gov; davecusr@frontiernet.net;
tmickelson@utah.gov; farming500@yahoo.com; Urie, Wayne - NRCS, Castle
Dale, UT; Christopher Merritt (cmerritt@utah.gov); Cory Jensen
(coryjensen@utah.gov); fedranch@yahoo.com; Beals, Anthony - NRCS, Salt
Lake City, UT; Barton, Roger - NRCS, Castle Dale, UT;
laurel.nielsen@ut.uacdn.net; Smith, Grant - NRCS, Price, UT; Hamilton,
Derek - NRCS, Salt Lake City, UT; Smart, Bronson - NRCS, Salt Lake City, UT
Subject: Green River Diversion Rehabilitation Cultural Resources Meeting Notes

Good afternoon, friends.

If you are receiving this it is because you were present at last Thursday's meeting at the Hastings Ranch to discuss the cultural resources mitigation process for the Tusher Diversion. I wanted to thank you all once again for your participation in that meeting. I feel that there were a number of great ideas that were brought forth for consideration, and I also feel that we are very on-the-mark in finding a balanced approach to the mitigation process. Please find attached to this email a summary of the points that were discussed at last Thursday's meeting. While there were several general ideas that were floated, I distilled the information down to a series of tangible elements that can be used as a basis for coming up with our mitigation plan. If you see anything that is missing from my notes, please let me know and I will amend the document accordingly. As discussed in the meeting, I would appreciate promptness in your responses (should you have any) so that we can keep the ball rolling.

Thank you once again for your ongoing interest in this project. I look forward to working with all of you on this rehabilitation project and am happy to answer any questions or address any concerns that you might have.

Regards,

Andy

Andrew M. Williamson, MS, RPA
Archaeologist, State Cultural Resources Specialist
United States Department of Agriculture
Natural Resources Conservation Service
Wallace F. Bennett Federal Building
125 South State Street, Room 4010
Salt Lake City, Utah 84138-1100
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Green River Diversion Rehabilitation Project Section 106 Public Meeting Notes 2/6/2014

Mitigation Plan Overview

- Mitigation must be conceived and completed in relative proportion to the overall scale of the project
 - o Grandiose, epic mitigation is incongruous with the scale of the undertaking
- Mitigation must focus on cost-effective measures that do not burden the project sponsors, local community, farmers, or ranchers
 - o Common sense mitigation approach that balances the needs to the participants in the Section 106 process with the resources (financial or otherwise) that are available
- Mitigation must effectively capture those aspects of the Tusher Diversion Irrigation Complex and surround area that are being lost or altered by the proposed rehabilitation
 - o History of the Tusher Diversion Irrigation Complex, the architectural uniqueness
 - Much of the history has been explored on a cursory level, but there are a lot more sources that can be checked
 - The architecture is unique, but has never been formally documented and is not fully understood.
- Mitigation must provide a means of giving back to the public
 - o Interpretation, Outreach, and Education

Addressing the History of the Tusher Diversion Irrigation Complex- Deliverables:

1. Complete additional archival research of the Tusher Diversion Irrigation Complex
 - a. Focus on information available at the John Wesley Powell Museum in Green River, the Museum of Moab in Moab, the Utah State Historical Society, and the J. Willard Marriott Library at the University of Utah
 - b. Additional review of information at the Museum of the San Rafael in Castledale, Utah, the Utah State University Eastern Library and Prehistoric Museum in Price, and the Merrill-Cazier Library at Utah State University in Logan, as appropriate.
 - c. Use JoAnn Chandler (J.W. Powell River History Museum) as focal point for data collection
 - i. Knows materials, contacts better than just about anyone.
 - d. Can also coordinate with Grant Smith (NRCS) on a situational basis.
2. National Register Nomination of the Tusher Diversion Irrigation Complex
 - a. Could include the Tusher Diversion, the Canals, and the Hastings Ranch
3. Synthesize the historical information on the Tusher Diversion Irrigation Complex into a publishable article
 - a. Most appropriate source for the publication may be the Utah Historical Quarterly.
 - b. Will centralize and simplify information from the data collection process (IMACS forms, NRHP nomination, HABS/HAER documents, etc.) into a public-friendly document.
 - c. Will exist in perpetuity through the Museums, Historical Societies, Libraries, and will exist online.



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Addressing the Uniqueness and Architectural Characteristics of the Tusher Diversion Irrigation Complex- Deliverables:

1. Complete archaeological monitoring of the removal of the Tusher Diversion and affected portions of the East Side Canal.
 - a. Focus on collecting data regarding the design and materials used to construct the original structure
 - i. Idea is to arrive at a 'reverse-engineered' schematic rendering of the structure to the extent that it is possible
 - b. Determine the presence or absence of any previous versions of the Tusher Diversion within the river channel
 - c. Document any other unknown archaeological resources associated with the diversion if any are discovered during the removal of the diversion
2. Complete Level 2 HABS/HAER documentation of the affected historic properties
 - a. Review existing archaeological and engineering data prior to commencement for adequacy
 - b. Gather additional data (photographs, measurements, descriptions, etc.) as appropriate to complete documentation to professional standards.
3. Complete an archaeological monitoring report detailing the results of the removal process.
 - a. Submit to the Utah SHPO and consulting parties to close out the process
 - b. Will include updated archaeological site record information

Addressing the Public Aspects of the Tusher Diversion Irrigation Complex- Deliverables:

1. Hold a public outreach meeting for the rehabilitation nproject at the John Wesley Powell Museum in May 2014 in association with Utah Archaeology Week
 - a. Present a paper & public lecture on the history of the Tusher Diversion
 - b. Invite the public to bring in photographs, newspapers, journals, etc. of the diversion to share
 - i. Make scanners, copiers available for data collection
 - c. Collect names and contact information of participants with anecdotes, stories, or accounts of the Tusher Diversion's history.
 - i. Can follow up for later oral interviews if necessary.
 - d. End presentation with a tour of the Hastings Ranch and Tusher Diversion site
 - i. Pending land owner consent
2. Install a permanent exhibit at the John Wesley Powell River Museum detailing the history of the Tusher Diversion Irrigation Complex
 - a. Museum has agreed to donate a 10-ft-wide x 6-ft-deep display area in the basement of the museum for the display
 - i. Could be condensed into a smaller space if need be
 - b. Contents of display remain up in the air
 - i. Could include a model/replica/diorama of the diversion and surrounding area
 1. Would detail aspects of construction
 2. Any such exhibit would need to be covered due to the number and age of the participating visitors...
 - c. Display would feature interpretive signage that discusses the history of the diversion and its role in the economic and agricultural development of the Green River area.



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**Addressing the Public Aspects of the Tusher Diversion Irrigation Complex- Deliverables
(continued):**

3. Install an interpretive kiosk for the Tusher Diversion Irrigation Complex on BLM property on the west side of the Green River (Pending)
 - a. Provides visitors with additional information on the structure and its history
 - b. Re-directs the public away from the east side of the river

Other historical preservation considerations:

1. Maintain the historical fabric of the location by incorporating elements of the original design of the Tusher Diversion into the rehabilitated version
 - a. Shape, location, water flow, etc.

DRAFT MEETING MINUTES

McMILLEN, LLC

To:	File	Project:	Green River EIS
From:	Dan Axness	Cc:	File
Date:	February 13, 2014	Contract No:	
Subject:	NRCS Green River EIS-Boat Passage		

1.0 INTRODUCTION

1.1 Purpose

The purpose of these meeting minutes is to document the major discussion points from the February 13, 2014 meeting regarding the downstream recreational boat passage (boat passage) for the Green River EIS and Concept Design project.

2.0 ATTENDEES

3.0 MEETING AGENDA ITEMS

3.1 Concept Design and Preferred Alternative

Dan Axness presented the concept design and preferred alternative. The preferred alternative at the time of the meeting consisted of:

- Replacing the diversion structure in place
- Providing three downstream fish passage notches and an upstream fish passage channel at river left (the east side of the Green River)
- Fish detection sensors (PIT Tag detectors) in the fish passage channel and the fish passage notches
- Providing a boating channel with a tilting weir gate to the east of the fish passage channel
- Sediment sluice and debris passage gates at each end of the diversion structure

3.2 Boat Passage Alternatives

The discussion was opened about other possible boat passage alternatives including:

- Boat passage on the left bank as shown in the preferred alternative
- Boat passage in the middle of the structure (near the existing middle fish passage notch)
- Boat passage on the right bank

A discussion ensued regarding the radial gates (used for sluicing sediment and passing debris) operating near boat passage; significant concern about boater safety was expressed by the boaters and the irrigators.

In addition, concern was voiced about boats exiting the boat passage on the left side of the dam and getting stranded due to lack of water on the Tusher Wash sediment deposit. Also, if the boats did not get stranded on the sediment deposit there was concern about sufficient flow and depth being available to allow boat passage just downstream of the dam.

The boater preferred the middle location option.

The water users preferred the middle location also.

3.3 Water Rights, Fish Passage and Boat Passage

Dan discussed the various adjudicated water rights (irrigation and hydropower), the navigability requirements by the State of Utah and the requirement for fish passage by the Endangered Species Act. Dan also presented the information pertaining to the Record of Decision (ROD) for the Environmental Impact Statement (EIS) addressing the operation of Flaming Gorge Dam. Following this information, Dan presented a graph of the flow at the USGS Green River gage from the year 2000 until present. During the period of record from 2000 to 2014, a few days during 2002 did not have sufficient flows to meet all of the demands. These days were in January when fish passage is not as critical and boating is unlikely (due to significant coverage of ice). Since the ROD there have been no days on the gage record (during the growing season, boating season and fish passage season) where the flow measured did not meet all of the competing interests.

The water users confirmed that this was the case from their experience.

3.4 Additional Topics

None

3.5 Action Items

McMillen will discuss the middle boat passage location with the Recovery Program.

McMillen will include the middle boat passage option in the EIS.

Computation Sheet

NRCS-ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State		Project		
By	Date	Checked by	Date	Job No.
	13 Feb 2014			
Subject				Sheet _____ of _____
Green River Diversion Dam - Boat Passage				
Name		Organization		
KC Salvage		NRCS		
Karen Smith		City of Green River		
Laurel Nielsen		GR Conservation District		
Sarah Siefken		Green River State Park		
Kelly Dunham		Green River		
Lee Thayne		Green River Farmer + Hydro		
Anthony Beals		NRCS		
Chris Dunham		G R Farmer		
Boddy Young		Utah State Parks Boating Program		
NATHAN FEY		AMERICAN WHISTEWATER		
Allison Lerch		Forestry, Forest State Lands (Sovereign)		
Matt Blocker		BLM		
Von Bowerman		Green River Canal Co.		
Dan Axness		McMillen, LLC dan.axness@mcmillen-llc.com		

McMILLEN, LLC

To:	Meeting Attendees	Project:	Green River Diversion Rehabilitation EIS
From:	Dan Axness Greg Allington McMillen, LLC	Cc:	File
Date:	February 18, 2014	Contract No:	AG-8D43-D-13-0007
Subject:	NRCS Green River Diversion Rehabilitation EIS Meeting Minutes		

1.0 INTRODUCTION

This memorandum documents the meeting held on February 18, 2014. The meeting started at 2:00 pm and was adjourned at approximately 3:00 pm. The following people were in attendance:

Name	Organization
Greg Allington	McMillen, LLC
Dan Axness	McMillen, LLC
Aimee Hill	McMillen, LLC
Laura Ault	FFSL
Allison Lerch	FFSL
Melissa Trammel	NPS
Dave Speas	BOR
Tony Beals	NRCS
Floyd Johnson	BLM
Jeff Brower	BLM

2.0 MEETING DISCUSSION POINTS

2.1 Status of EIS and Comments/NEPA Coop Agency

- Draft EIS March 10 – Issued for public comment.
- Draft EIS Coop Agency – Still working with BLM, USACE, USFWS (nothing back from USACE, BLM still pending).
- Boat Passage – Dan Axness: With flows from Flaming Gorge, no need for a mechanical weir for boat passage. State of Utah: Boat passage over dam is necessary (navigability) public trust.
- Separate meetings to discuss water allocations (Dave Speas to send BOR contacts).
- Boat passage in center is preferable.
- Send Dave Speas hydrologic write-up about hydrology and correlation to Flaming Gorge.

2.2 Cultural Meeting

- Treatment plan being drafted, MOU Pending.
- Sending package to ACHP.
- Andy finalizing and coordinating with relevant parties.

2.3 Boating Meeting

- Flaming Gorge flows modified by 2006 ROD/BO to allow for razorback sucker larvae. Base flows modified during summer months for consistent flows. Allowance in Reach 3 to go below 25% in low flow years (975 cfs to 1625 cfs).
- The placement of passage can have all the functions at the same time. Current users confirmed that 200 cfs could be used for passing.
- Boat passage location – No need for a gate associated with boat passage. 2002 low water year – may need to keep gates to make sure that passage was closed off in low flows.
- Combination boat/fish passage – PIT tag detectors in notch, no problems anticipated.
- Park Services – How much water needed? 20-30 cfs.
- Dan – Stop log options to block it off.
- Dave – There is an allowance to go $\pm 25\%$ of target flow in Reach 3. Low end 975 cfs emphasis on upstream reaches, often difficult to reach target.
- Dan – Will talk to people in Provo. Further analysis needed. Pumps downstream – look at how water is being allocated in area.
- Rec. Program McAbee – Do not reduce effectiveness of fish passage.
- Ault – Navigability is a must. Not negotiable. Cannot permit the structure without navigability.
- Dan – Probabilities of occurrence – how many days per year in a dry year? Hydrologic model based on gage at Green River, used measured flows.
- Passage – center location preferable for safety and accessibility.

3.0 NEXT MEETING

The next meeting is scheduled for March 3, 2014 at 2:00 pm.

4.0 MEETING ADJOURNED

The meeting was adjourned at approximately 3:00 pm.

DRAFT MEETING MINUTES

McMILLEN, LLC



United States Department of Agriculture

To:	Meeting Attendees	Project:	NRCS Green River EIS
From:	Dan Axness Greg Allington McMillen, LLC	Cc:	File
Date:	March 3, 2014	Job No:	AG-8D43-D-13-0007
Subject:	NRCS Green River EIS – Meeting Minutes		

1.0 INTRODUCTION

This memorandum documents the meeting/coordination call held March 3, 2014. The meeting started at 2:00 pm and was adjourned at approximately 3:00 pm (MST). The following people attended the meeting:

Name	Organization
Tony Beals	NRCS
Roger Barton	UACD
Floyd Johnson	BLM
Jeff Brower	BLM
Bob Norman	BOR
Brent Uilenberg	BOR
Dave Speas	BOR
Laura Ault	FFSL
Melissa Trammell	NPS
Greg Allington	McMillen, LLC
Dan Axness	McMillen, LLC
Aimee Hill	McMillen, LLC
Kevin Jensen	McMillen, LLC

2.0 REVIEW OF PAST MEETINGS

2.1 Cultural Resources Meeting – February 6, 2014 at diversion.

- NRCS developing Draft Treatment Plan and MOA.

2.2 Boating Meeting – February 13, 2014 at city of Green River.

- Boat passage and fish passage was proposed in the center of the channel.

3.0 CONCEPT DESIGN

McMillen presented the hydrologic information developed for the boater meeting. The flows have been adjusted by the USDI BOR (2006) Flaming Gorge EIS and Record of Decision (<https://www.usbr.gov/uc/envdocs/eis/fgFEIS/index.html>). Water Allocations – 2006 ROD. Flows have been met since 2006 in Reach 3 to operate the diversion. Flows can be fluctuated $\pm 40\%$ from target values.

McMillen discussed that the boating community would prefer the boat passage in the center of the channel. Laura Ault emphasized that FFSL would prefer boat passage in the center of the channel as well.

Open discussion occurred about problems with debris removal, fish entrance conditions, and other access issues associated with the center of the channel fish passage and boat passage location. Roger Barton said irrigators are concerned about river left boat passage and the effects from Tusher Wash sediment deposition. Bob Norman is concerned about moving fish passage to the center and the ability to remove debris. Floyd Johnson does not think there is enough time to revise the Concept Design and Draft EIS to reflect a change in the passage location.

Recommendation and Decision – Keep the location of the fish passage and boat passage the same for the Draft EIS.

4.0 EIS APPROACH AND STATUS

BLM is still getting final approval and will be kept on as a cooperating agency in the Draft EIS. Draft EIS alternatives will remain the same. Draft EIS comment period will open on March 14, 2014. Draft EIS will be posted by NRCS to EPA website March 7, 2014. Draft EIS public meeting will be held at the John Wesley Powell River History Museum on April 10, 2014 at 6:00 pm.

The following newspapers will be contacted for Notice of Availability of the Draft EIS:

- Salt Lake Tribune
- Moab Times
- Emery County Progress
- Provo Daily Herald
- ETV 10 News (www.etv10news.com)

The next meeting/coordination call is scheduled for March 17, 2014 at 2:00 pm MST (meeting notice has been sent).

5.0 MEETING ADJOURNED

The meeting was adjourned at approximately 3:00 pm.

DRAFT PHONE RECORD

McMILLEN, LLC

To:	File	Project:	Green River EIS
From:	Dan Axness	Cc:	File
Date:	March 6, 2014	Contract No:	
Subject:	NRCS Green River EIS-Boat Passage		

1.0 INTRODUCTION

1.1 Purpose

The purpose of these meeting minutes is to document the discussion between Brody Young and Dan Axness on March 6, 2014 regarding the downstream recreational boat passage (boat passage) for the Green River EIS and Concept Design project.

2.0 DISCUSSION

Brody had sent an email to McMillen project team, Alison Lerch and Nathan Fey concerning the location of the boat passage on the Green River Diversion Dam (Tusher Wash Diversion). Dan Axness set up a conference call with Brody and Alison.

Alison was able to attend the conference call briefly but was in a previously scheduled meeting.

Brody expressed concern that at the boater meeting we had ended the discussion with middle boat passage being preferred and at the subsequent Concept Design Conference Call that the direction of the team hasd been reversed.

Dan discussed the approach McMillen was taking with the alternatives:

- No Action
- Baseline – Replace the concrete structure, add no other features
- Replace In Place With Passages Alternative - Replace the concrete structure, add fish passage, boat passage and water user features such as radial gates. This alternative would include an option for boat passage on river left (east end) and an option for middle passage.

Dan explained that this arrangement keeps the EIS on schedule while allowing the public and involved agencies two options to comment on.

Brody asked if the river right option was an alternative. Dan replied no – the public safety risk was too high.

The phone call concluded on good terms with both parties satisfied.

DRAFT MEETING MINUTES

McMILLEN, LLC



To:	Meeting Attendees	Project:	Green River Diversion Rehabilitation EIS
From:	Greg Allington Dan Axness McMillen, LLC	Cc:	File
Date:	April 24, 2014	Job No:	13-046
Subject:	Green River Diversion Rehabilitation EIS Passages Meeting		

1.0 INTRODUCTION

This memorandum documents the meeting/conference call held on April 24, 2014. The meeting started at 3:00 pm and was adjourned at approximately 4:00 pm. The following people attended the meeting:

Name	Organization
Brent Uilenberg	BOR
Bob Norman	BOR
Alison Lerch	FFSL
Jason Johnson	FFSL
Heather	FFSL
Kevin	USFWS/Rec Program
Dan Axness	McMillen, LLC
Aimee Hill	McMillen, LLC

2.0 GREEN RIVER PASSAGES MEETING

- Dan- Upstream passage progression currently located at river left in EIS.
 - Comments from boating community – center passage – low flows still passable.
 - Irrigators interested in keeping boaters away from the banks.
 - For safety, keep boaters away from big radial gates.
 - Fish passage – Alternatives – center and river left.
 - Comments – river left for access.
- Kevin – October 2013 – fish passage discussion (river left).
 - Supportive of components together, provides water delivery at same location, giving more depth.
 - Center passage – Brent?

- Main concern is ability of fish to get downstream.
 - Queue up on boat passage.
- Brent – Better results with fish passage at bank.
 - Maintenance – passage vs. debris removal. Need access annually.
 - Boaters – maintenance and operation could be difficult – center passage could be hard to reach and jammed with debris regularly.
 - Attraction flows – fish key in on high velocity flows.
- Heather (FFSL) – Center passages are preferred. Alison – not sure about clean-up requirements. Chance to alleviate that? Design?
- Dan – Small improvements can help, no sharp corners, backfill structure?
 - Shape – will be as reasonable as possible to cross.
 - O&M plan/agreement covering entire structure and all components – all parties.
 - To be developed during final design.
- Alison - Special use permit – when GRCC holds special use lease, they will assume O&M.
 - Maintain that center passage is the place to put it from a navigability standpoint.
- Kevin – “Center” looks like center of diversion – thalweg looks a bit east.
- Bob – Boat passage vertical walls? Dan – Slope is 10%.
- Kevin – Fish passage move left? Suggest moving boat passage farther east to get them closer to each other.
- Price Stubbs – Major problem with debris removal – more trash than on Green River?
- Dan – Concerned about dog-leg turn parallel to diversion means more debris caught in fish passage.
- Boaters – Alison/Heather – center passage for depth? No problem with moving slightly river left.
- Bob/Brent – Move fish passage to other side of radial gates?
- Pre-Design Memo – get moving through Rec Program review
 - Boat passage BOR/FFSL
- Dan – Recommend boat passage at center channel and fish passage at river left. No other comments.
- Bob/Brent – Problem with center boat passage. Comments on EIS assumed left passage.
 - Kevin – comments on center boat passage and river left passage? Navigability at all flows?
- Alison – “Probably” is gray area, some sort of vessel needs to be able to pass all the time.
- Jason – Can’t expect wet passage every year, don’t envision dragging boats across concrete, 95% passable.
 - Sufficient flows to meet all requirements.
 - No way to know rights in future, only the rights currently.
 - There will always be debris in all scenarios, 1300 cfs to Jensen Gauge, uses met more than 95% of days in August.
- Bob/Brent – Reasonable concession – move boat passage further left.
- Kevin – Doesn’t think center boat passage constitutes a change in comments for the EIS.
 - Doesn’t necessarily create a flaw in terms of USFWS and ESA perspective.
 - Fish perspective ok.

- Kevin will issue BO to NRCS and BLM – no Corps.
- Bob – If diversion is inoperable, who fixes it?
- BO – Effectiveness level of structure – what constitutes success? What if the fish don't like it? Maintaining velocities, clear of debris, depth, access.
- Dan – One of the major components of the final design firm should be extensive experience with fish passage and boat passage.
 - Will send a marked up copy of plan today.
- Kevin/BOR – Good with compromise to move center passage to river left.
- Jason – How far to river left? Reminder: how boaters exit the boat passage is more important than how they enter.
- Kevin – Dan has mentioned flows will meet all water rights. Offer invitation to check out a working group – Green River Water Acquisition Team (GRWAT) – recommendations for flows and obtaining rights.
 - FFSL should participate in this group to get a sense of what's going on – boat passage is not in the equation right now.

3.0 MEETING ADJOURNED

The meeting was adjourned at approximately 4:00 pm.